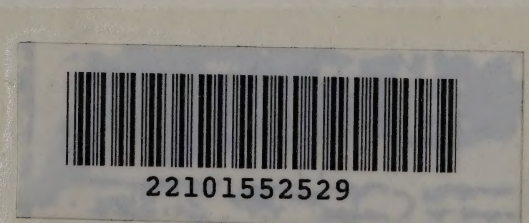
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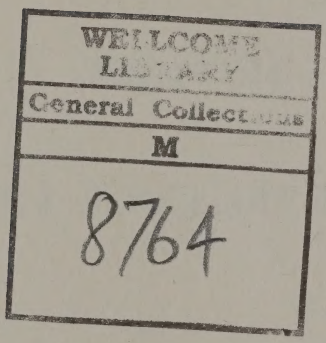
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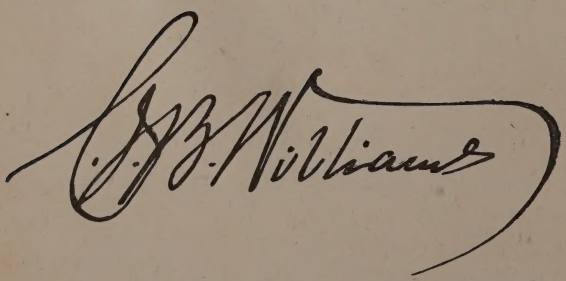

MEMOIRS

OF

LIFE AND WORK

BY

CHARLES J. B. WILLIAMS, M.D. F.R.S.

PHYSICIAN-EXTRAORDINARY TO H. M. THE QUEEN

FIRST PRESIDENT, AT THEIR FORMATION, OF THE PATHOLOGICAL SOCIETY OF LONDON AND OF THE NEW SYDENHAM SOCIETY; LATE PRESIDENT OF THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY; CONSULTING PHYSICIAN, FROM ITS FOUNDATION, TO THE HOSPITAL FOR CONSUMPTION, BROMPTON; ETC.

LONDON

SMITH, ELDER, & CO., 15 WATERLOO PLACE

1884

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PREFACE.

In offering to the Profession and to the Public these memoranda of the life and labours of a hard-working physician, extending over a period of upwards of sixty years, I think that I am performing a duty, incumbent on all, to make known experiences, which have been neither few nor unsuccessful, in relation to the science and art of Medicine, and may not prove uninteresting in regard to its history.

But I feel that some apology is due for the long delay which has postponed the publication to so late a period of my life. My excuse must be the state of my health. The narrative will show how a constitution, never robust, yet endowed with great activity of mind and body, suffered at times from *overwork*, especially during the ten years' tenure of the Professorship at University College, and that in the busy life which followed, there was no sufficient recovery from that overstrain, to enable me to fulfil the literary engagements which pressed upon me. Works called for and undertaken, for which materials had been long accumulating, were not completed; editions out of print were unrenewed; and during a period of upwards of twenty years, all available time and strength were devoted to the cares and responsibilities of a large consulting practice.

One work I was enabled to produce, through the welcome assistance of my son Dr. Charles Theodore Williams.[1] I allude to that on 'Pulmonary Consumption,' noticed in Chap. XXXVII. It also has been for some time out of print.

At the time of my retirement, nine years ago, I was too much wearied and worn to attempt any great work. But the rest and refreshment which God has vouchsafed to me during the interval, encouraged me a year ago to commence these Memoirs, which, through His continued mercy, I have been enabled so far to complete. Whether or not I may be spared to add a second volume—to contain more strictly professional matters, some of which have

[1] This son is now, through God's mercy, recovering from a severe and prolonged attack of typhoid fever, (contracted at Naples), under which he has been laid up for the last two months. He had just visited his patients under treatment in high altitude in the Engadin.

never been published, and others only partially,—I leave in His hands.

When I began this task, I was so much out of the habit of writing, that I fear the language of the early chapters will be found curt and constrained. Egotism was unavoidable; but what I had to say was put into as few words as possible, with little regard to elegance of composition.

In the free and independent manner in which I have thought it my duty to criticise public institutions, I have been actuated by no censorious or hostile feeling, but only by a sincere desire to correct error and abuse, and to promote the honourable and efficient working of these bodies for the ends for which they were established, for their own credit, and for the public good.

Having lately been introduced to the eminent veteran chemist and philosopher, M. J. B. Dumas, Member of the Institute, who was interested in my observations on the Sun-spots, I took the opportunity of showing him my pencil reminiscences of his contemporaries in the Academy of Sciences and at the Sorbonne; and he recognised the likenesses as good in all but that of Thénard, which, he says, wants the *tête de lion* brow of the great chemist; to whom M. Dumas acted as assistant at that time, 1825. There are few survivors of that remote period to supply such testimony; and I am fortunate in finding one so distinguished.

As the work is intended for the public, as well as for the profession, it may be objected that in some parts the subjects and language are too technical to be interesting or intelligible to the general reader. If it be so, these may be passed over, without much impairing the general sense of the narrative. But in these days of expanding intelligence, there is an increasing inclination, as well as aptitude in the public mind, to get sound elementary views in every branch of knowledge; and in none would such diffusion of information be more mutually beneficial between a profession and the public than in that of Physiology and Medicine.

Villa du Rocher, Cannes, France
March 7, 1884.

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MEMOIRS

OF

CHARLES J. B. WILLIAMS, M.D., F.R.S.

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The writer of these memoirs was the youngest, but one, of nine children of the Rev. David Williams, who was upwards of forty years perpetual Curate of the Collegiate Church of Heytesbury, in Wiltshire, and also Custos of the Hungerford Almshouse (for 12 old men), in which he resided. It was an old red-brick building, consisting of a long front with two wings, surmounted by a heavy tiled roof, with a clock and cupola in the centre. This was my home, until I went to the University of Edinburgh.

My father was of a Cardiganshire family, several members of which were eminent scholars and teachers. His eldest brother, the Rev. John Williams, was long known as the master of the endowed school of Ystradmeirig, near Hafod, in which many of the best educated men of the Principality received their first classical instruction. His son, the late Archdeacon of Cardigan, friend of Sir Walter Scott and John Lockhart, and author of several well-known works in history

and philology, also attained high scholastic eminence, as the founder, and for many years Rector, of the New Academy at Edinburgh.

My father, likewise, was for many years engaged in tuition; and prepared for the universities several gentlemen, who have since attained distinction as scholars. When he ceased to receive pupils, he still conducted the education of his sons; until they were transferred to public schools. Three of the brothers fulfilled the usual routine of scholastic discipline by going to a public school, and afterwards to an English University. In my case my father deviated from this rule; he did not send me to school at all; but allowed me to pursue my education at home, until my entry at the Edinburgh University at the end of 1820. In this course I feel sure that he did right; and I have ever felt thankful for the decision. I made fair progress in classical studies; going through the usual elementary books in Latin and Greek; Cæsar's 'Commentaries,' Ovid's 'Metamorphoses,' Virgil's 'Æneid' and 'Georgics,' some of the odes of Horace, and parts of the works of Cicero and Sallust. In Greek, I did not get beyond the 'Analecta,' 'Diatessaron,' Homer's 'Iliad,' and Xenophon's 'Cyropædia.' In Latin translation and composition I got on well; through my father's plan of writing out, and *repeating backwards*; that is, rendering the original from the translation: but I never could make much hand of Latin versification. Perhaps a few floggings at school might have inspired me.

But in all these classical studies I took no delight: they were always more or less irksome; and they occupied so much time and mental effort, that there was little opportunity for other reading or recreation.[1] It was quite different with other departments of knowledge. Geography, History, Biography, Natural History, and above all, Natural Science, I always found interesting; and when not overtired with lessons, I often preferred reading any book, that I could get on these subjects, to

[1] That this distaste for Latin and Greek arose from no mental inaptitude for the study of these languages, is sufficiently evident from the fact that afterwards I found less difficulty, when the topic was more interesting; and with regard to Greek, much later in life, there are few studies from which I derived so much pleasure as well as profit, as that of the Greek Testament.

idleness or play. At that period hardly any of these were taught in boys' schools; and very few books upon them were within the reach of school-boys. Had I been sent to school, it is most probable that my mind would have been engrossed with school teachings, such as they were, school games, and school tricks, to the exclusion of much more congenial and instructive matter. I do not deny the beneficial influence which the best regulated public schools have, in disciplining boys' minds, in correcting habits of selfishness, rubbing off angularities of character, and in promoting a generous rivalry of intellect, and a gentlemanly standard of social conduct; and as a general rule these advantages may preponderate over objections; but there are many exceptional instances, which are more suitable for home or private tuition; and I believe mine to have been one.

My father had a considerable library; chiefly books of Divinity and Classics, but not a few on Science, including the works of Priestley, and Boyle, Smith's 'Optics,' Hooper's 'Rational Recreations,' and twenty-four volumes of 'Philosophical Transactions Abridged.' These were all ransacked for their most intelligible and interesting matter: but the greatest advance was made, on the acquisition of several elementary books on natural science which appeared about that time; especially Joyce's 'Scientific Dialogues,' Mrs. Marcet's 'Conversations on Chemistry and Natural Philosophy,' Accum's 'Chemical Amusements,' and Bingley's 'Natural History.' Instructed and inspired by these, it was not long before I began to bring to experiment and practice the knowledge which I had acquired by reading. Living in a small country town, and with very limited means, I was truly attempting the pursuit of knowledge under difficulties. But having some natural dexterity, with fondness and aptitude for carpentering, and other tool work, I succeeded in making a variety of instruments, and in performing a good number of experiments in natural philosophy. Before the age of fourteen years, I had constructed two electrifying machines, and a battery of Leyden jars; a voltaic pile; several little telescopes, microscopes, kaleidoscopes, and æolian harps. Having fitted up a little laboratory with bottles, Florence flasks and stands,

wine and ale glasses and jars, and a few retorts, which my father procured from London, I obtained practice in chemical manipulation, and was able to demonstrate most of the striking phenomena of elementary chemistry, without any instruction, beyond that derived from books. I was lent by a friend the 'System of Chemistry,' by Professor Thomas Thomson of Glasgow, one of the most complete works of that time; and from this I wrote a full analysis of its contents; and thus became familiar with most of the facts and principles of chemistry, so far as they were then known. The knowledge thus acquired, proved most helpful in the commencement of my university career; rendering my attendance on the simple, but admirably illustrated lectures of Dr. Hope on chemistry, an easy and agreeable pastime, rather than a work of labour.

Hardly so much can be said of a turn at astronomy, to which my desire for objective knowledge impelled me, after reading in the family the astronomical discourses of Dr. Chalmers. Brothers and sisters clubbed together, and with the liberal assistance of an uncle, we got enough money to buy a good achromatic telescope, with astronomical powers of sixty and eighty. With this we were able to see the belts and satellites of Jupiter, the ring and one satellite of Saturn, the phases of Venus and Mars, the mountains and craters of the moon, the spots on the sun, and the appearances of several of the double stars and nebulæ.[1] A neighbouring clergyman also lent me the use of a larger instrument, a $3\frac{1}{2}$ feet achromatic by Dollond, with rackwork adjustments, which facilitated my amateur observations. Thus began another of my favourite occupations; and if it did not supply any knowledge available in my professional career, stargazing, together with the reading necessarily connected with it, was salutary to the mind,

[1] I have this instrument still; and after a lapse of upwards of sixty years, it has been brought into requisition in my retirement under the clear skies of the Mediterranean. This early familiarity with the aspect of the heavens, and with the management of the telescope, has proved a great source of interest and amusement; and during the last winter, the great Comet, the transit of Venus, and variations in the sun-spots, have supplied objects of unusual import, on which I have been able to make a few original observations, which have been published in '*Nature*.'

in exercising it in habits of careful and patient observation, and in supplying it with vast and noble objects of contemplation.[1]

My father, perceiving that my inclinations were in pursuit of natural knowledge more than of classical learning, forebore to press me with so many lessons. Although his bias had been always in favour of educating his sons in an English university for the Church, he had already made an exception in the case of my second brother, who was placed under a surgeon (Dr. Brabant of Devizes), but died in the second year of his apprenticeship. My eldest brother, William Rosser, went from Winchester School to Oxford, where he gained first-class honours, and became scholar, and afterwards fellow, of Queen's. Deciding in favour of law as a profession, he obtained the Vinerian scholarship, became D.C.L., and took chambers in Lincoln's Inn, where he resided until his death in 1871. Distinguished as his course was both at school, and at the university, he was not successful at the bar. He published a volume of Vinerian lectures, which were well spoken of; but his manners were not conciliatory, and his habits so recluse, that in later years he was lost to society. My third brother, Thomas, went from Marlborough School to St. John's College, Cambridge, where he obtained some exhibitions and prizes, but only junior honours, on taking his degree. He was my favourite brother, and most constant companion before I left home; and on subsequent occasions, when I visited Heytesbury: for after he was in orders, he had successively several curacies or incumbencies in the neighbourhood. His sudden death, from perforation of the stomach, was one

[1] My experience may be exceptional; and I may not escape the charge of fanciful exaggeration, when I say, that those early observations of the heavenly bodies gave me something like a personal interest in them; and when, in later years, I read from time to time, of wonderful discoveries in the sun's photosphere, of Langley, Nasmyth, Janssen, Secchi, Lockyer and others (see *The Sun*, by Prof. Young, 2nd ed. 1883), I felt that these concerned mine old acquaintance, the quivering limb of whose disc, and whose varying spots, I used in my boyish days to watch for hours, with interest and awe. In like manner, the æolian harps, which I found easy to construct, with thin deal planks, and silk or catgut cords, gave me my first practical lessons about sonorous vibrations; for as I felt the cord to vibrate, and heard the notes, transferred from string to string, by touch of the passing wind, objective motions became subjective thoughts; and thus I personally learned about them much that proved useful later, when I had to make acoustics a special study.

of bitterest affliction to myself and the whole family, to whom his Christian conduct and amiable character had endeared him. I had a brother, David Theodore, six years my junior, therefore too young for mental companionship. But my father, as advancing age rendered him less apt at boy-teaching, used often to devolve on me the office of hearing my brother's lessons, until he was sent to school, shortly before my departure for Edinburgh. This brother went to Oxford, and after taking his degree, was appointed teacher of English Language and Literature at the New Academy of Edinburgh, of which my cousin, Archdeacon Williams, was Rector. Theodore married his cousin, daughter of the Rev. David Williams, who succeeded his father in the Ystradmeirig school. Afterwards Theodore emigrated with his family to New Zealand, where he died.

To return to my own history. My obvious predilection for the pursuit of natural history and natural science, brought my father to the conclusion, that I must be another exception to his favourite plan; and that medicine ought to be my profession; and instead of wasting several years in the drudgery of an apprenticeship, I should have a course of study, extended beyond the usual curriculum, at several medical schools, beginning with Edinburgh (which for some years had enjoyed the highest reputation in medicine and in science), and carried on in London, and if possible, in one or more of the schools on the Continent. My own opinion, as that of a mere boy, was not worth much; but I need hardly say how much my inclination was in favour of this plan, which held out the prospect of escaping the distasteful thraldom of school life, and of entering, at no distant period, on the higher career of a university student, for a course of studies, of which I had already had some foretaste and enjoyment. These anticipations were incentives to perseverance in study, and tended to deter from frivolous pursuits and idleness.

But it must not be supposed that I was indifferent to the sports and amusements of boyhood. Although diminutive in size, I was strong and active, and excelled all the boys of the village in leaping and running. When my brothers returned for the holidays, I enjoyed their games as much as anyone:

and during the term time, when only two of us remained at home, we had to invent means of increasing the amusement of our rambles in a not very interesting country. One device which we adopted and carried to great perfection, was walking on stilts. We always made our own stilts, and were generally content with a height of two or three feet, which carried us dry and clean through dirty roads, streams, and shallow rivers; whilst the skill required in walking, added zest to an active and healthy exercise. My ambition prompted me to higher attempts in this line, which were not equally commendable: I made one pair of stilts with a footing twelve feet from the ground; and mounted on these, I was quite able to walk, and to look into the upper windows of the house: but my father very properly discouraged these presumptuous pranks. Our walks were often rendered interesting by particular pursuits, such as botanising and nutting in the woods: mushrooming on the downs: fossil-hunting in the chalk and flints of the quarries: fishing for minnows and such small fry in the streams. The manor was too strictly preserved to allow of superior fishing; and for the same reason we were forbidden shooting and other field sports; but of course, like other children, we had our pets of birds and animals, which it would be too trivial to dwell on. But we also kept poultry; and a few particulars connected therewith are worth recording. I used to spend a good deal of time in the poultry yard; and I made a special study of the language of cocks, hens, and chickens, of ducks and drakes, turkeys, geese, and, in short, of all domestic birds and animals. Having a nice ear, and a considerable power of mimicry, I got to learn their different notes and cries, and to imitate them well enough to influence the creatures towards me, just as if I were one of themselves. These brute utterances have all their meanings, and are expressive of various feelings; whether pain or pleasure, anger or love, fear or confidence, defiance or submission;—and are mutually intelligible among individual animals, as words are among human beings. Well, I found that by closely observing and imitating this brute speech, with corresponding gestures or movements, I could get to a sort of mutual understanding with animals, and thereby influence their behaviour. I could

fill a little volume with anecdotes exemplifying this; but let one suffice. I had a fine game-cock, truly the cock of the walk, and lord of the dunghill. I used at times to challenge him by crowing, and other notes of defiance; then, scraping the ground with my feet, and other galline intimations of war were immediately answered on his part, by the drooping of his wings, ruffling of his neck- and tail-feathers, pecking at the ground, and then flying at me in full fight, *more suo*, with beak and spurs. I commonly received his assaults on my feet and legs, which were sometimes wounded, even through my clothes; but once, when I was stooping down, he attacked my face, inflicting a deep wound with his spur in one cheek, which left its mark for years after. Had it been in my eye, it might have cost me my sight. I did not mind it, for I was delighted with my success in getting him to fight me. In these battles, I generally feigned myself conquered after a round or two; running away, and imitating the notes of a beaten cock, which are somewhat like those of a hen. After this, whenever I appeared in the yard, especially if approaching him, or any of his hens, or presuming to crow in his presence, he would fly at me, and drive me away. But sometimes I persevered in the fight, until I conquered him; which I was able to do, game as he was, without inflicting on him any pain or injury; but simply by tiring him down. Cocks in their fights often wound each other, sometimes mortally, by a spur penetrating the skull or large blood-vessels; but more commonly their fights end chiefly through the exhaustion of the strength and courage of the weakest. After I had thus tired out my cock, he manifested his submission by running away, with drooping tail, tightened neck-feathers and wings, uttering only a few plaintive hen-like notes. When I appeared in the yard the next day, my vanquished antagonist showed his submission by the same signs of fear and subjection, slinking away from the hens with thin upstretched neck, tight-packed wings, and drooping tail. After maintaining my supremacy for a few days, I made an attempt to restore his courage and raise him again to his former ascendency; and, wonderful to say, I completely succeeded; mainly through the poultry dialect, which I had learned to utter. I had no

plumage to attenuate, or tail to droop, but making myself look as small as possible, and simulating the notes of a beaten cock when approaching him, I made a feint to run away; and after a few turns of this kind, my hero began to swell his plumage, and deepen his note, and after the challenge of a crow or two, asserted his supremacy by giving me chase. Lovers of nature and diligent students of natural history need not search far for objects of interest around them.

My mother was the eldest daughter of a respectable surgeon (whose name also was Williams), who practised many years at Chepstow, and left other daughters and sons who were long well known in that neighbourhood. My mother and her sisters were educated at the school of Barleywood, near Bristol, under the tuition of the sisters of Mrs. Hannah More, and received instructions in reading from that excellent lady herself; who, strictly religious as she was, used to take her pupils, whenever opportunity offered, to witness the acting of Garrick, which she considered an important aid in education. My mother was long afflicted with deafness; even before her marriage. So long as I can remember, her health was delicate; but she bore her ailments, and the cares of a large family, with exemplary piety and patience, and was much endeared to us all by her tenderness and devotion to our interests. She died in 1820, shortly before my departure for Edinburgh, of a very painful form of ovarian dropsy; and it was in taking my turn at her bedside, that I had my first lessons and encouragement in nursing.

To my four sisters I was also tenderly attached; and my being so constantly at home rendered our association the more intimate. They were all older than myself; and much of my elementary instruction I owed to them; especially in English Grammar, History, French and Drawing. Later, they all took interest in my scientific pursuits; and when I was separated from them, we kept up a regular correspondence in the long letters of those days of dear postage. Two of my sisters died early; one shortly before, the other just after, I settled in London. The youngest died ten years ago. The eldest was married; and died eight years ago at the age of eighty-six.

CHAPTER II.

LIFE AND STUDENTSHIP IN EDINBURGH. 1821–1824.

Journey—Residence with Dr. Thomson—Studies—Classics—Chemistry—Anatomy—Difficulties—Drs. Monro and Barclay—Plan of Teaching in Edinburgh—Notices of Professors—Dr. Brabant—Amusements—Return Home in Autumn—Church Attendance—Rev. A. Alison and R. Morehead: Comparison with Dr. Chalmers. Second Year—Private Studies—Royal Medical Society—Library—Public Speaking—Reminiscences of Students and Friends—Reminiscences of Professors—Sir R. Christison—Dr. John Thomson—Dr. James Hamilton—Drs. Duncan, Senior and Junior—Dr. Hope—Dr. Alison.

Late in the autumn of 1820, I started for the long journey to Edinburgh. Except in visits to relatives at Bath, and at Chepstow, I had never left my home before. I went first to an uncle in London, with the intention of proceeding thence by ship, or smack, which sailed between London and Leith: but it was found that these were discontinued; and I had to get as I could through the long land journey, by coach, which occupied five days; sleeping at York, and Newcastle-on-Tyne. At Edinburgh, I resided in the house of Dr. John Thomson; in the first year in John Street, Canongate; afterwards at Minto House, Argyll Square. He received from six to eight other pupils. We were well fed, and generally made comfortable; and I must say that I was always treated with kindness, by both Dr. and Mrs. Thomson, and during the whole of my stay of four years, we never had any disagreement. It was not so with some of the other students; and there were many changes of companions during my sojourn.

Dr. Thomson's aid in our studies consisted principally of selecting the courses of lectures for our attendance, and in private instruction in Latin and Greek. He was a fair classic;

and had been tutor in the family of Dr. Gregory, Professor of Medicine, and author of the 'Conspectus Medicinæ.' This was one of our books of study; alternated with Cullen's 'Nosology,' Celsus 'De Medicinâ,' and some of the works of Sydenham and Hippocrates. My father's teaching had given me an advantage over my fellow pupils in Latin; and I was glad of the opportunity of further improvement in the knowledge of the language, especially as the chief examinations of the University were at that time conducted in Latin.

The subjects of the first year's study in the College, were, Chemistry, Institutes of Medicine, Anatomy and Dissections. Attendance on Dr. Hope's lectures on Chemistry was to me a cause of great delight. The chief facts and principles were almost all familiar to me from previous reading, and my own experimentation; but to see them illustrated on so grand a scale, by experiments, so well devised and successful, was both gratifying and inspiring. The lectures on Anatomy, on the contrary, were by no means agreeable. The subject was new, and at first disgusting; and the lecturer, Professor Monro, *tertius*, drawled forth his descriptions in a manner as dry as the bones he was demonstrating. Dr. Thomson, aware of the unpopularity of the College professor, entered us also to an extra-academical lecturer, Dr. Barclay, famous for his treatise on 'Muscular Motion.' His manner was emphatic and lively enough; but the students, who attended his class, were such a noisy and disorderly set, that it was difficult to study quietly and profitably among them. Nor was I much more successful in the College dissecting room. I was given a head to dissect —the most difficult part; and although I tried hard, with little assistance from the demonstrator, I made poor work of it. In fact, I was a very little fellow; and although alive and precocious in some things, I often found myself slighted and snubbed in the struggles of life. My progress during the first year was quite satisfactory in all respects, except anatomy; and I had to make up my deficiency in subsequent years, by a course of practical anatomy under John Lizars; and by making anatomical drawings myself. Since that time the study of anatomy has been so much facilitated by admirable plates and manuals, and by more careful and accurate methods

of teaching, that it may seem hard to understand the difficulties of sixty years ago.

During the summer session, we had the lectures on Botany, and Botanical excursions, which made a pleasing variation in our studies. Then, also, I began to attend hospital practice at the Infirmary, and clinical lectures; to which, by an arrangement between my father and Dr. Thomson, I was to have free access during my whole residence in Edinburgh. Nor were these opportunities neglected. My visits to the hospital were constant, and I never missed a clinical lecture, always taking careful notes of interesting cases and remarks.

Much has been said against teaching by lectures: some declare that they learn better from their own reading, than from any *ex cathedrâ* address. My experience is different. In the case of subjects admitting of demonstration, by experiments, or by appeals to the senses, in drawings, black-board illustrations, and such objective aids, it can hardly be disputed, that lectures teach better than books. But even in more didactic topics I have always been able to learn more readily from a well-delivered lecture, than from reading the same matter in a book. The living words of a clear speaker arrest the attention, and command the thoughts, more than the same words read in a book. I found lectures useful, not only in the amount of information, which they conveyed, but also as a mental exercise, suggestive of thoughts, beyond the words of the lecturer, and not always in accordance with them. I was, therefore, more assiduous than most students in attendance on lectures, even beyond those prescribed in the usual curriculum.

The system of teaching in Edinburgh is based chiefly on full courses of lectures, delivered by the respective Professors; each giving four or five a week during the winter session of five months. Attendance in my time was not compulsory, and therefore varied with the attractive capacities of the several lecturers. Those best attended were, on Materia Medica (Dr. Andrew Duncan, junior); on Chemistry (Dr. Hope); and Midwifery (Dr. James Hamilton). The lectures on Practice of Medicine (Dr. Home); Anatomy and Surgery (Dr. Monro, *tertius*); and Institutes of Medicines (Dr. Duncan,

senior), were very ill attended; but the class-room of the latter was always crowded, when the new assistant Professor, Dr. W. P. Alison, took the place of Dr. Duncan (old Duncan, as he was always called). Dr. Alison was always my favourite Professor; and I not only attended, and took copious notes of every lecture delivered by him, both on General Pathology and on Clinical Medicine, but I also became his pupil at the New-town Dispensary, and with him visited patients at their own homes in the wynds and closes of the Cowgate and Canongate. Thus I had the advantage of the personal as well as public instructions of the most enlightened physiologist and physician of the Edinburgh school, who was not slow to appreciate and encourage the zeal and devotion of his pupils.

Having both home and companionship in Dr. Thomson's house, I had little need of visiting; and had few acquaintances out of the house. One friend, Dr. Brabant of Devizes, was of great use to me. He had retired from an extensive country practice, which he had carried on with great ability and success for many years; and he had come to Edinburgh to take the degree of M.D., with the intention of practising only as physician. He was a man of highly cultivated mind, and agreeable manners: I found his companionship and counsel most improving; and he became one of my most valued and intimate friends. He advised me most judiciously with respect to my studies; encouraged me by entering into my favourite scientific occupations, and gave me judicious warnings against youthful frivolities, especially in dress, to which I was too much inclined. Happily, however, I was too much interested in the various studies, which I was pursuing, to be led far astray by gaiety or idleness.

At the end of the summer of my first year, I returned home to my family in Wiltshire for three months; and this was my only holiday. During the remaining three years, I remained in Edinburgh continuously; except one excursion with an aunt and cousin to the Highlands, which I enjoyed immensely. Never having been at school, I felt less need of regular holidays. Mental occupation was my chief delight; and by varying the subjects, it afforded sufficient recreation and amusement, without much need of the diversions of

holidays. But we were not without more amusing resources. I was fond of music; played a little on the flute; and when I could, practised part-singing with fellow students. Occasionally we were gratified by a visit to the theatre; and at different times witnessed the performances of Edmund Kean, Charles Young, Macready, Charles Kemble, the eldest Matthews, Mrs. Henry Siddons, Misses Stephens and Paton. These were occasions of great enjoyment; but too expensive to be indulged in often, and too fascinating to be compatible with steady habits of study. Yet in moderation, theatrical entertainments of the higher kind, are not without utility, as affording lessons in elocution, and in the study of human nature and of the power of dramatic art.

In conformity with habits inculcated at home, I was regular in attendance on Sunday duties; worshipping usually at St. Paul's Episcopal Chapel; the esteemed ministers of which were the Rev. Archibald Alison, and the Rev. Robert Morehead. The former was the author of the well-known 'Essay on Taste,' and was accounted a pleasing writer. In the pulpit he was less remarkable for the depth of his doctrines, than for the elegance of his composition; and especially for the emphatic, almost theatrical, manner, in which on mounting the pulpit, he recited the Lord's Prayer. Venerable in aspect, with smooth, very white, hair, kneeling low, with upward gaze, in deep-toned voice he would slowly pronounce the words, 'Our Father!' then after a pause between each, solemnly continue the petitions impressively to the end; when with altered voice and tone he would give out his text and go through the sermon. Two or three times in Edinburgh, and several times later in London, I heard Dr. Chalmers, and was much struck with the contrast of both his manner and his delivery, with those of Mr. Alison. A man, plain in appearance, and except the size of his ample forehead, inexpressive in feature, he begins his discourse in a low tone, and with words, more Scotch than emphatic, and with action, if any, quite destitute of grace. Yet as the ideas flow forth, the words swell out in significance and strength; the features light up; the body and limbs are thrown into action, and although the movements may be more forcible than grace-

ful, they all seem subordinated to the torrent of eloquence, with which a mighty mind delivers its thoughts on the loftiest of themes. Impressions from such preaching are abiding. The liveliest recollections that I have in connection with my pastors, Mr. Alison, and his more evangelical colleague, Mr. Morehead, are that they were the respective fathers of my most esteemed teacher, Professor Alison; and my dear and valued friend, Dr. Charles Morehead.

In my second year I was left very much to my own discretion in the choice of lectures, and in the employment of my time; as Dr. Thomson discontinued his private lessons. In addition to attendance on the usual lectures, and at the Infirmary, I pursued a plan of private study of subjects not professional. I had a course of private lessons in Mathematics. After this I took up the study of Logic (Duncan's). Then I went in for Metaphysics, in the works of Locke, Brown and Stewart, and took a glance at the ancient systems in Enfield's 'History of Philosophy.' The Encyclopædia Britannica, and that of Edinburgh, supplied me with much good reading on historical and other subjects. These readings were continued through the vacations of three months in the autumn.

The library of the Royal Medical Society supplied me with books; and also with apparatus for carrying on investigations. I joined this society in my second year; and found it of great utility; not only for the use of its valuable and extensive library, but also in its debates, which were carried on every week during the session; giving its members opportunity of public speaking and discussion. I soon took an active part in these meetings and became intimate with many of the fellows.

In my first attempt at speaking I was extremely nervous. However well acquainted with the subject, on rising, the heart began to beat violently, which confused one's thoughts, and almost took away the power of utterance; and it was only by resolute perseverance, that I was enabled to overcome this difficulty. I tried the plan of writing the speech beforehand, and getting it by heart, but this did not answer well; because I had a bad verbal memory: learning for recitation, whether prose or poetry, had always been my greatest

difficulty: perhaps it might have been diminished and the weak faculty strengthened by the enforced discipline of school. My memory for facts and events was, on the other hand, very strong and retentive; and the consciousness of this difference in the functions of memory, inclined me much in favour of phrenology, at least in its metaphysical part, which assigns different powers of comprehension and memory for different classes of subjects. Another cause of difficulty in public speaking, I found to be a fastidiousness in the choice of words, which occasions hesitation, embarrassing the speaker, and not agreeable to the audience. I had to learn that this arose a good deal from conceit, and an attempt at fine, rather than plain, speaking; and that for beginners, at least, it was better to be content with simple words of conversational speech, and to devote the main attention to the subject-matter of the discourse. This should be well considered beforehand, and if at all complex, it should be arranged under a few heads written on a card, with the addition of any names or particular words, which may be required to assist the memory.

The corrections and practice obtained at the meetings of the Edinburgh Medical Society were of lasting use to me; and although I never succeeded much in speech-making, yet I acquired fluency and clearness in delivery, which qualified me for the office of Lecturer in after life.

The recollections of this Society especially call to mind the many friends with whom I was intimate at Edinburgh, none of whom, so far as I know, now survives, except Dr. Henri Clermont Lombard of Geneva. He, with his German associate, Ferdinand Becker, was among those, who took the most prominent part in the debates, although they had to speak in a foreign language. Becker died early; but with Lombard my intimacy was renewed in Paris in 1825–6; and it has been my happiness several times since to visit my dear old friend at his home at Geneva, where he has achieved a long career of the highest usefulness and honour. Of my contemporaries and friends who have passed away, I may mention the names—James Lomax Bardsley of Manchester, Alexander Hannay of Glasgow, James Hope of London, Charles Holland

of London, Prestwood and Henry Lucas of Brecon, Robert Young of Camberwell, Lewis Powell of London, and Robert Chaffey of Martock. I was also intimate with Alexander Urquhart, and John Booth James. The former died in India; I do not know what became of the latter.

Of the professors under whom I studied not one now survives. Sir Robert Christison was the last to depart, full of years and good works. He had just begun his career in my time, as professor of Medical Jurisprudence; and I was one of three, who formed his whole class in 1823, which was before attendance on that chair was made compulsory. He was then laying the foundation of his knowledge in toxicology, which he had lately been studying under Orfila. He was an industrious and careful compiler, and made his lectures useful by the amount of information which they contained: but he seemed to me to have little capacity for original research, or to be profound in either physiology, or medicine. Yet he held his ground steadily, among colleagues more talented and turbulent than himself, and fulfilled a long and honourable career.

The inefficiency of the Chair of the Practice of Medicine in the College drove many students to the lectures of Dr. John Thomson, in the extra-academical school of Surgeon's Square. He had been Professor of Military Surgery; and had distinguished himself by several publications, especially that on Inflammation, in which he developed the views of John Hunter, with additional observations of his own. He was one of the first to point out the share which obstruction of the minute blood-vessels has in the process of inflammation; a point which twenty years later, I was led to trace to its chief cause, increased production and adhesive action of the white corpuscles of the blood. (Gulstonian Lectures, 1841.) His lectures were attractive, not only by their scientific tone, and from his earnestness and eloquence, but also through the illustrations of disease which they exhibited, in numerous coloured drawings of morbid anatomy, from the pencil of Dr. Carswell (originally an artist), whom Dr. Thomson sent to Paris for this express purpose. These gave me the first insight into the appearances presented by the results of disease; and further encouraged my turn for drawing, which I had already

found most useful in my studies, not only of healthy anatomy; but also of diseases of the skin; having endeavoured to copy several of Willan and Bateman's coloured plates. But interesting as these lectures undoubtedly were, and enlivened by his vehement denunciations against the abuses of medicine through drugging and over-dosing, I gained from them very little knowledge of what the practice of medicine ought to be. In fact, Dr. Thomson was not a believer in the efficacy of medicine, as then practised. He is reported to have said to a homœopath who was introduced to him:—'My dear sir, we shall not disagree much in our practice: you give very little medicine, and I give none at all!' But I believe that such expressions of incredulity were rather protests against the empiricism then prevailing, than declarations of the total inefficacy of rational medicine. The noble part, which he afterwards took in promoting the establishment of a Professorship of General Pathology in the University, and the success with which he performed its duties, showed that he had hopes of the future of medicine, however sceptical he may have been of its present efficiency.

A remarkable contrast in this respect was Dr. James Hamilton, Jun., Professor of Gynæcological Medicine, (as it is now called.) He had a remedy for every disease; and a *rationale* for every remedy. He was very popular as a teacher; and was said to be remarkably successful in practice. But he was not a favourite with his colleagues. On my mentioning to one of the most charitable of them, how instructive I found the lectures of Dr. H. and that I hoped we could rely on his facts; the answer was,—'Well, I suppose that he grounds his facts; but I *know* that he *rounds* them.'

Dr. Andrew Duncan, Jun. (familiarly called 'Young Duncan'), Professor of Materia Medica, was a painstaking teacher, and well read in modern works; being also editor of the 'Edinburgh Medical and Surgical Journal,' the best medical periodical of that time. I have copious notes of his lectures, which were full of information, not confined to materia medica and pharmacology, but also dipping into Physiology and General Anatomy, which had been receiving a new impulse from the genius of Bichat and the experiments of Majendie.

It was currently reported that Professor Duncan, Jun., expected to succeed his father in the Chair of Institutes of Medicine, and had been working up this subject; but the old Professor lived on, reading lectures written fifty years before, discussing 'the views of Professor Gaubius, and the recent experiments of Baron Haller.' So that when Young Duncan was appointed Professor of Materia Medica, he introduced much of the matter prepared for the other course. No doubt the lectures were enriched thereby; but it was an *embarras de richesses*; and he was unable to get through the subjects announced in his prospectus. He was an earnest, conscientious man, and with much emotion expressed his regret in the last lecture, at not having completed his course to his own satisfaction. Nevertheless I profited much by his teaching, and by the spirit of progress, which he encouraged. He was one of the first in this country to study and practise auscultation; and in his lectures on the medical uses of plants he adopted the natural classification of Jussieu, of which we learnt nothing from Dr. Graham, the Professor of Botany, who confined his teaching to the artificial system of Linnæus.

Dr. Hope's lectures were very popular; although delivered in rather a pompous manner, they were rendered attractive by the grand scale and successful performance of their experimental demonstrations. But they were very elementary, and chiefly confined to inorganic chemistry. Even in this, he was slow to adopt the innovations of modern science. For instance, he continued to uphold the compound nature of chlorine. When I attempted to interest him in the investigations which I had been making on respiration and animal heat, he returned my paper with the remark, that the subject was quite proper for a young gentleman's thesis, but that he declined to enter into the subject. Very different was the conduct of Dr. Alison, when the same matter came into his hands, as my inaugural dissertation, before my examination for the degree. Undeterred by its unusual length (upwards of 100 pages) he carefully read it; and after I had passed my chief examination, he sent for me, to discuss some of the details, and expressed his entire concurrence in its conclusions.

CHAPTER III.

LIFE IN EDINBURGH. ORIGINAL RESEARCHES ON THE CHANGES IN THE BLOOD BY RESPIRATION. 1823–1824.

Discussion of Theories of Respiration and Animal Heat—Objections to the Black-Crawford View, and that of Mr. Ellis—Improvement on Views of Lagrange, &c.—Arguments and New Experiments in Support—Proof of Permeability of Membranes to Gases—Action of Oxygen on Blood and Tissues—Origin of Animal Heat—Correction of Brodie's Experiments.

I HAD not proceeded far in my medical studies before chemical physiology became my favourite pursuit. The analogies which the observations of Priestley and Lavoisier had discovered between combustion and respiration; and the hypotheses framed by Black and Crawford to explain the relation of the two processes to the production of animal heat, seemed inviting advances towards the understanding of a subject, which had hitherto been mysterious and unintelligible. But difficulties arose in the application of this chemical view of the origin of animal heat. If, as Black supposed, it was caused by the union of oxygen with carbon in the lungs, these organs ought to be the seat of the highest temperature, whereas observation proves that animal heat is evolved wherever the blood circulates, and that if the lungs are warmer than other parts of the body, it is only to the amount of one or two degrees. Then came the proposition of Dr. Crawford founded on experiment, that arterial blood has a greater capacity for heat than venous; so that the heat becomes latent in the lungs, to be evolved in the course of the circulation, as the blood changes to venous. The accuracy of Dr. Crawford's estimate ('On Animal Heat') of the respective specific heats of arterial and venous blood, was questioned by Legallois, who computed that were Dr. C.'s figures correct, there would be intense cold, instead of heat,

produced by arterialisation. Careful experiments made by Dr. John Davy ('Phil. Trans.' 1814) proved that Dr. Crawford had greatly over-estimated the differences; and that the capacity of arterial blood was so little above that of venous, as to afford no explanation of the little increase of temperature in the lungs, if union of the oxygen with carbon takes place in the very act of respiration.

But I had to point out several other objections to the Black-Crawford view of the relation of respiration to animal heat. That view had been adopted and defended with much ingenuity by Mr. W. Ellis, whose treatise on Respiration was then the most recent. My essay, first read and discussed at the Royal Medical Society, and afterwards published as a thesis, was entitled, 'On the Blood, and its Changes by Respiration and Secretion.'[1] It will suffice here to give a brief analysis of the parts which relate to respiration. Mr. Ellis maintained, that one function of the lungs is to exhale or secrete carbon from the blood, by a vital process, whilst their mechanical action supplies air to carry it off in the form of carbonic acid. Against this view I opposed, not only the objection above referred to—1, that the lungs would be then the seat of calorification—but, 2, that it is contrary to all physiological analogy of secreting organs, to suppose that they can separate from the blood an elementary matter, like carbon; and 3, it is equally opposed to chemical analogy, that the carbon, so secreted and separated, could combine with oxygen at the temperature of the body. I stated several other objections to this view; and showed how it failed to account for the many well-ascertained facts in relation to blood and air out of the body.

The view which I found to be most in conformity with the chemical and physiological knowledge of the day, was that of the absorption of oxygen by the blood, originally proposed by Lagrange, and advocated by Hassenfratz, but receiving no countenance from any recent authors, either in this country or

[1] In this essay is given a summary of the most recent researches on the chemical composition and physical properties of the blood and its constituents, together with the results of my own experiments, particularly on the nature and properties of albumen.

abroad. It required, in fact, further investigation and extension to make it equal to the wide and important problem in hand. Availing myself of such additional knowledge, I shaped the statement of the theory in the following propositions.

1. The difference in composition between arterial and venous blood consists chiefly in this, that the former contains an additional quantity of oxygen, and the latter of carbonic acid, chemically united with it; the affinity subsisting between the blood and oxygen, being more powerful than that between blood and carbonic acid.

2. The oxygen gas of the respired air, pervading the walls of the pulmonary vessels, displaces, by virtue of its superior affinity, an equal bulk of carbonic acid gas, and thus converts venous into arterial blood.

3. In the course of the circulation, the oxygen thus absorbed, gradually attracts carbon from the proximate principles of the blood, and uniting with it, produces heat; and by thus also forming carbonic acid, converts the blood from arterial into venous.

(1) In support of these propositions I proceed to cite observations made by others and by myself. Vogel and Sir E. Home proved the presence of carbonic acid in venous blood by means of the air-pump; and I found that milk and serum are also capable of absorbing it, and yielding it again on removal of atmospheric pressure; which seems to indicate that its combination is loose. It has been objected that carbonic acid ought to combine with the soda in the blood; but that appears not to be free, but to be already in the state of carbonate and subphosphate. At the time when I wrote, I could give no direct evidence of the presence of free oxygen in arterial blood, as the air-pump had not succeeded in extracting it; but I cited several instances [1] of other animal fluids, saliva, mucus, and white of egg, absorbing oxygen, and yielding it to other substances (as metals); and several years later Michaelis found, by analysis, that arterial blood contained more oxygen than venous.[2] I held the notion that the oxygen gas in respiration

[1] Fourcroy, *Ann. de Chimie*, xxviii.; Priestley *On Air*, vol. iii.; Wells, *Phil. Trans.* 1797.

[2] Poggendorf, *Ann.* 1832.

displaces the carbonic acid of venous blood, bulk for bulk, in the mode already formulated by Dalton. The process of diffusion of gases by interpenetration, investigated later by Graham, Mitchell, and others, had not then been developed; but I refer to these later in a series of papers published in the 'London Medical Gazette' in 1835.[1]

(2) The second proposition affirms the chemical nature of the change, by which venous is converted into arterial blood; and a leading argument in its favour, is that it can be imitated, by exposing venous blood to oxygen, or to air, out of the body; which produces the same change of colour, from dark red to bright crimson, which takes place when venous blood becomes arterial. By reference to my own and the experiments of others, I was enabled to prove that this change of colour, although affecting chiefly the red corpuscles, requires the presence of serum, or of some analogous liquid, such as milk, or diluted white of egg, for its production; this being the medium through which the absorbed oxygen is transferred to the red particles. Further, in opposition to the assertion of Mr. Ellis to the contrary, I proved by experiment, that the changes take place both in the colour of the blood, and in the composition of the air around it, when the blood is enclosed within an animal membrane, such as a rabbit's bladder. The most conclusive experiment was the following: 1,200 grains of venous blood in a rabbit's bladder (which, when dry, weighed 5·5 grains) was suspended in a receiver containing 100 cubic inches of atmospheric air, standing over mercury. The blood within the bladder soon assumed a florid hue. After two days the air was analysed, and had acquired ·075 per cent. carbonic acid gas; which in 100 cubic inches is equivalent to ·9875 grain carbon. (Thomson's 'Chemistry,' vol. i. p. 229.) The bladder, when washed and dried, weighed 5·1 grains. Therefore at least half a grain of carbon must have been derived from the blood through the membrane of

[1] '*Observations on the Changes produced in the Blood in the Course of its Circulation. With Experiments.* Read to the Royal Medical Society of Edinburgh in 1823. With additions and remarks on discoveries and opinions subsequently published. The original essay formed the subject of a Thesis in Latin in 1824; and in 1826 an abstract of it was published in the *Transactions of the Medico-Chirurgical Society of Edinburgh.*'

the bladder. The change in the colour of the blood, by the air acting through a membrane, had long before been proved, by the observations of Priestley, John Hunter, and Goodwyn: but this was the first decisive proof of a corresponding change, in the air outside the membrane.

No part of these early observations has been so amply confirmed by researches subsequently made, as these, in which I endeavoured to establish the permeability of animal membranes to gases. In fact this gaseous pervasion, which I had here proved to take place with regard to cases immediately bearing on the subject, was afterwards shown by Dr. Mitchell of Philadelphia, to be the result of a general power of penetrativeness, which both gases and liquids possess towards solids, and towards each other; and which seems to be allied with some of the simplest and most essential properties of matter. The further development of the law of diffusion of gases through the intervention of a membrane or diaphragm, which we owe to the researches of Professor Graham, has removed all remaining difficulties connected with the subject: but this was a later discovery, and is beyond the matter in hand, which is to refer to the humble part which I took, sixty years ago, in supporting views on the chemistry of respiration, which have gradually gained ground up to the present time.

(3) The third proposition assumes that in the course of the circulation the oxygen of arterial blood gradually attracts carbon from some of its proximate principles, and uniting with it, produces heat and carbonic acid, and so reconverts the arterial into venous blood. This change I describe as taking place throughout the greater circulation, but particularly in the capillary vessels. 'It is by no means necessary to suppose that this carbon is supplied in a free state, as some have imagined. It may be derived from the decomposition of some of the proximate constituents of the blood; to effect which, two chemical affinities would assist—one between the oxygen and a portion of the carbon of one of the animal principles of the blood, and the other between the remaining constituents of this principle, to form a new one, containing a smaller proportion of carbon. The union of the oxygen and carbon is thus favoured by every circumstance; they are

exposed to each other's action in proximate contact, with no influence, mechanical or chemical, to prevent their union.' When it is considered that the preceding passage was written in 1823, it may be allowed to have anticipated by many years some of the views of Dumas and Liebig with regard to the changes in the blood through respiration. But animal chemistry had not sufficiently advanced to suggest the later bold generalisation of Liebig, that the fuel for respiration is supplied, rather from the hydrocarbon of the food and of the blood, than from the higher animal constituents.

The essay, in its second part, discusses the subject of the *origin of animal heat.* Heat must be generated by the union of oxygen and carbon known to take place in the body; whether *enough* to account for all the heat is further considered; and the writer suggests that heat may be generated also from other changes taking place in the body, such as the conversion of blood-constituents into urea, uric acid, and carbonate of ammonia, decaying or consuming processes like that of combustion, as in the heating in putrefaction and fermentation.

Then follow remarks on Brodie's experiments, supposed to prove that artificial respiration will not maintain the heat of an animal killed by decapitation: but it is shown that the animal heat was not observed closely enough in these experiments; for on more accurate trials it was raised again and again, by carefully conducted artificial respiration: which is contrary to the results obtained by Brodie. Further I proved by experiments, that the animal heat could be raised by using galvanism, in addition to artificial respiration. The matter is too technical for further details here; but it may be referred to in another volume.

CHAPTER IV.

GRADUATION. LIFE AND STUDIES IN LONDON. 1824–1825.

Graduation. Pedestrian Tour in the Highlands—Professor Thomson at Glasgow —Return Home. Life and Studies in London—Sir Charles Bell's Lectures—Sir B. Brodie—Dr. Maton—London Hospitals and Surgeons—Physicians dissatisfied with their Royal College—Amusements and Reflections.

In the autumn of 1824, my fourth year in Edinburgh, I received my degree of M.D. At that time there were no such honorary distinctions, to mark the merits of the graduates, as are common in other universities, and have more recently been properly introduced at Edinburgh: so we were fain to be content with the verbal compliments of our examiners, as we passed to be 'capped' by the Principal. After an affectionate parting with the friends in whose house I had so long resided, I started, in company with two fellow-graduates, Dr. Chaffey and Dr. James, for a pedestrian tour through the Perthshire Highlands. After three years of pretty constant study, I very thoroughly enjoyed the holiday; and began to try my hand at sketching the scenery of Loch Katrine. At Glasgow, I called on Dr. T. Thomson, Professor of Chemistry; who had been long my Magnus Apollo in chemistry. I presented him my thesis, expressing my obligations for the aid which his works had afforded me; and I received as much civility as could be expected by a raw young graduate, without introduction.

On my return to my home at Heytesbury, although legally qualified, I had no intention of practising, except gratuitously among the poor; but hoped to continue my studies at other schools, for at least two years longer: this my Father liberally enabled me to do; although the claims of his large family made economy an essential consideration.

During the following winter, I attended a course of Lectures on Anatomy and Physiology by Sir Charles Bell and Mr. Shaw, including also those on the Nervous System, delivered by the former at the College of Surgeons. His new views were highly interesting; and I was especially delighted by the manner in which he illustrated his descriptions by drawings on the black board.

My family had been intimate with Dr. Fowler of Salisbury, an eminent provincial physician; and he introduced me to Mr. (afterwards Sir Benjamin) Brodie, and Dr. Maton, both Wiltshire men, from whom I received much kindness and encouragement. Brodie was particularly interested in my experiments on respiration and animal heat, although in them I had ventured to criticise and correct his prior experiments on the same subjects. Finding that I was well acquainted with his researches on the action of poisons, and had a turn for physiological investigation, he recommended me to enter on that field, and offered me the notes of several observations, which he had not published. Often afterwards I regretted that I had not eagerly availed myself of that advantageous proposal; and by entering at once at St. George's Hospital secured a standing and connection which might have greatly forwarded my prospects in life. But the fees of the London Hospitals were very high; and what I had seen of their medical practice and teaching, did not compare favourably with the fuller clinical instruction, that I had been in the habit of receiving in Edinburgh: but above all, the greater attraction of the Parisian Hospitals and Schools of Medicine, deterred me from prolonging my stay in London beyond the present season. I therefore merely visited the different hospitals at times; and had the opportunity of observing the personal and professional characteristics of Abernethy, Astley Cooper, Lawrence, Brodie, and Green—all surgeons: for I heard of no hospital physicians of sufficient eminence to prove attractive.

But I was introduced to a small body of physicians, who used to meet together for the purpose, not only of discussing professional topics, but also, and especially, for self-defence and protection against the restrictions and usurpa-

tions of the Royal College of Physicians, which at that time admitted them to practice, only under the designation of Licentiates (Permissi). It would take too much space to explain this matter fully; but there is reason to think that their proceedings were instrumental in leading to reforms in the by-laws and proceedings of the College, by which its partial and exclusive character became modified and better suited to fulfil the intentions of its establishment and the wants of society. Among those whom I met at these gatherings, I remember Dr. Birkbeck, Dr. Mann Burrows, Dr. Uwins, Dr. Clutterbuck, Dr. A. T. Thomson, and Dr. Roberts. Some years later Dr. (afterwards Sir) James Clark, Dr. J. Somerville, Dr. George Gregory, Dr. Neil Arnott, joined the meetings.

But in London I did not, as in Edinburgh, confine myself to professional objects. I mixed a good deal in society, and took part in the amusements of the day; and this with the greater enjoyment, from their novelty, as well as their superiority to anything of the kind which had come in my way before. Music and painting were especially fascinating: the theatres too had their charm; and my fondness for them might have tempted me too far, had not my limited means, as well as the claim of more serious pursuits, held me back. I fear that my religious convictions at that time were not sufficiently deep to guide my conduct; for although outwardly I conformed to the church observances, in which I had been brought up, and avoided vicious habits, yet my heart was still worldly and not under the Divine influence of the Light of Life. It was not until some years later, that it pleased God to reveal Himself to me in Christ, as The Way, The Truth, and The Life, and as The Preciousness, (Ἡ Τίμη)[1] far above all that the world and its sensuous, or even its intellectual, enjoyments, can offer.

[1] 1 Pet. ii. 7.

CHAPTER V.

LIFE AND STUDIES IN PARIS. 1825–1826.

Journey to Havre—To Rouen—To Paris by Diligence—Old French Roads—Entry to Paris by Barrière de l'Etoile—Contrast of Old and Modern Paris. Study of French. Lodging and Living. Lessons in Drawing—Utility of Science in the Study and Practice of Art—Professorship of Natural Philosophy recommended to Royal Academy—Empirical State of the Art of Painting. Fellow Students in Paris. Letters of Introduction—Professor Majendie—Experimental Research—Sabbath Observance. Dr. W. F. Edwards—Académie des Sciences—Sketches of Members—De la Place—Ampère—Vanquelin—Gay Lussac—Thénard—Cuvier—Humboldt, &c. Lectures of Arago at Observatory. Lessons in Italian. Visits to Theatres—Talma and Duchesnois—Mdlle. Mars. Dupuytren at Hôtel Dieu—Baron Larry at Val de Grâce—Roux and Boyer at La Charité.

At Midsummer, 1825, I went to Paris, by way of Southampton and Havre; halting a few days at the latter town to explore the scenery and quaint architecture of Honfleur, Harfleur, and other places in the neighbourhood. To me who had never before been abroad, the novelties of the Normandy dresses with high caps and gay cotton prints, men's coloured blouses, and great sabots, were amusing, and not less so the wonderful jabber of patois in the markets, and the strange look of the parti-coloured houses, with their high roofs and stuck-up gables. But my ignorance of the colloquial language marred my enjoyment, and my want of companionship drove me into venting my descriptions and impressions in letters to my friends at home.

From Havre to Rouen was a pleasant and refreshing trip in a steamer: but such a contrast was the journey from Rouen to Paris by diligence! as much a contrast as it would be with the present quick and clean transport by rail. The high-roads in France at that time were of great width, with an elevated road of rough pavement in the centre. On either side was a space of bare ground, hardly ever re-

paired; and therefore full of mud and holes in wet weather, and of dust, from six to twelve inches thick, in dry. In wet weather these were impassable, and the diligence was compelled to go on the rough pavement; but in dry weather the dust was less of an impediment, and heavy as it must have been, the drivers generally preferred the soft road to the hard. The dust seemed never to be thought of, but to be accepted as a necessary part of travelling. So when the lumbering van, called a *diligence*, with three compartments below, and the high driving seat, the banquette, and a mountain of luggage above, was dragged through this dust by from six to eight horses all jingling with bells, at no very slow pace either, it can be imagined in what a cloud we travelled from one end of the journey to the other. Coming from England as I was, where the stage coaches were so trim and bright in their equipments, cleaned up and polished every day, this total disregard of dust and dirt on both harness and vehicles did astonish me not a little. In fact in those times, no one ever thought of cleaning public diligences or harness; and if the postilions made an upper show of smartness in their laced hats and livery jackets, their huge jack boots below, were generally assimilated to the dingy hue of the dirty equipage.

Aloft on the banquette of this diligence, I made my entrance into Paris; and, fatigued as I was with dust and heat, I have not forgotten the impression produced on first viewing from the Barrière de l'Etoile, the château of the Tuileries, with its gilded domes above its gardens, at the end of the grand avenue of the Champs-Elysées, all lighted up by the setting sun. After having seen the entrance to other capitals and great cities of Europe, I must say still, that I have seen none to equal in effect, that of Paris at that time. Now, alas! the Tuileries is dismantled; but still when seen from the west, the domes and great buildings of Paris form a finer spectacle to approach than those of any other city that I know.

But the grandeur of the Paris of that time was more limited to the first approach, and to its great palaces and public buildings, than that of Paris of the present day. The Tuileries, Louvre, and Palais Royal, the quays of the Seine, with the Chamber of Deputies on the other side, and the

dome of the Invalides behind—and the picturesque towers of Notre Dame rising above the vista of the river; the streets of Rivoli, Castiglione, and De la Paix with the Place Vendôme, constituted the sole glory of the city. With the exception of the Palace of Luxembourg, and a few other fine buildings scattered here and there, the rest of Paris remained much in the dirt and darkness of past ages. The streets were narrow without trottoir, all roughly pitched, and sloping to the centre, along which ran a foul gutter, and dimly lighted with oil lamps, hung aloft by cords; consequently very dark at night, except where there were shops, which were adopting the modern illumination of gas. The bad smells, encountered everywhere, indicated the absence of all effective drainage: and the constant prevalence of diarrhœa and fever, especially among new-comers, may now be fairly referred to that cause; although at that time none of the doctors recognised it as a source of disease. The houses of the old streets were generally lofty, but irregularly built, with many storeys and numerous small apartments. The better class of houses had a courtyard and sometimes a little garden, with blank walls to the street, which did not improve their cheerfulness. In strong contrast to all this, the gay part of Paris, the boulevards, the Palais Royal, and a few principal streets and passages, were full of life and bustle; and such displays of finery and fashion, of ingenuity and cleverness, of taste and elegance, of cheapness and extravagance, and of sensuality and licentiousness,—as were probably unequalled in any other city. This was under the dynasty of the Bourbons, the reigning king being Charles X. Several times I saw him, parading the streets in religious processions, with his remarkably vacant expression of countenance, showing his teeth, as if to look pleased, but turning his head neither to the right nor to the left, to manifest any sympathy with his subjects on either side. There was no cheering: perhaps that would have been contrary to etiquette towards one who was king by *Divine Right*: but his unpopularity was obvious; and it was no surprise to me a few years after to hear of his deposition.

The transformation which Paris has undergone since that time is quite marvellous. Not only in the perfect paving, cleans-

ing, and brilliant lighting of its streets, the extension of handsome boulevards, in place of the close and filthy tenements of the old town, the placing of beautiful and well-kept gardens in every available space,—but also in the greater decency and outward morality of places of public resort, which used to be open marts of unblushing depravity. At my first visit, the Champs-Elysées in the summer were the scene of a perpetual fair; for the French *must* have gaiety and amusement: but like in the country roads, the dust lay many inches thick on the ground, and no one ever thought of watering or removing it. Consequently the colour of the trees in the Champs-Elysées, was rarely discernible; and garments and wares got a liberal coating. Now, all this ground is converted into beautiful gardens, well watered and kept in the highest order.

My first study on arriving in Paris was to master the language; and I came thus early, long before the schools and hospitals were open, to accomplish that object. I could read French fairly: but to speak it, or understand it when spoken, was quite another matter. So I had daily lessons, and took every opportunity which I could find to practise conversation with my master or with the people of the house. I lodged first in the Rue de la Sourdière St. Honoré, in connection with an English hotel; but was soon advised to move to quieter and cheaper quarters in the Faubourg St. Germain—No. 6 Rue St. Germain des Prés, formerly Rue Napoléon. Here I remained during my fourteen months' stay in Paris. I was well taken care of by an old soldier and his wife and step-daughter, who used to call me 'L'enfant de la maison.' I had a good-sized bedroom on the *rez de chaussée*, for which I paid forty francs a month. They supplied me with breakfast, excellent *café au lait*, and three *flûtes* (like the *croissants* of the present day, but straight) for twelve sous. I usually dined at a restaurant, frequented by the King's Gardes du Corps, in the Rue St. Dominique, close by. The dinner, consisting of soup, three courses at choice, dessert, bread at discretion, and half-a-pint of wine; cost twenty-four sous, including the waiter. I found this food generally good and quite sufficient. Sometimes with a friend, I would indulge in a two-franc dinner at the Palais Royal, *chez Richard*, Premier Salon

Français, an establishment, which has existed to the present day; and I have recently dined there, after an interval of nearly sixty years.

As the study of French did not occupy my whole time, I also took lessons in drawing of Mr. G. Sass, to whom I had been introduced, and who had been instructor in drawing to the Princess Charlotte. His forte was landscape painting, but he also gave instructions in heads and figures; and I profited much in every department. By nature I had a keen perception of form and colour; but I wanted teaching and practice, in the methods and manipulations of the art, and directions in the selection and treatment of objects to copy. I think that altogether I had three dozen lessons during three months of that summer; and this is all the instruction I ever received in drawing or painting. But I have continued to practise the art at times, in various ways, ever since; and although labouring under disadvantages from long interruptions and want of practice, it has been a great resource for my holidays. I have improved my opportunities since my retirement; and I think that I now paint landscapes better than I ever did, both in water-colours and oils.

In my amateur exercise of the art, I have found much advantage in referring to physical laws, to guide to an understanding of the rules. The optical law, that 'the visible size or dimension of an object is inversely as its distance,' is fundamental to the rules of perspective. The axiom, that 'the angle of reflection is equal to the angle of incidence,' is the surest guide to a true representation of the beautiful appearances of reflecting water. An accurate knowledge of the optical effects of air in decomposing light, supplies a key to the choice of colours in representing mountains, and other objects of light and shade, at a distance; and an accurate observation of the powers of near objects, such as leaves and flowers, to transmit light, or to reflect it, by specular, or by coloured reflection,—will prove the best clue to the representation of a foreground, in all its lively brightness and reality. The colour of blue veins under the skin, and of blue or grey in the iris of the eye, is referable to the opalescent property of animal membranes, arresting and reflecting the blue rays, and trans-

mitting the yellow and red, just as opal glass does. The pearly iridescence of a tendinous expansion on a muscle depends on the power of minute fibrils to decompose light, in a way that it is the province of optics to explain. On a late occasion, my old friend of this period, Dr. Leighton, introduced me to his son, the present distinguished President of the Royal Academy of Arts, Sir Frederick Leighton; and I endeavoured to persuade him that there ought to be a professor of Natural Philosophy in that Institution—to teach the students of painting something of the laws of light and colour, in relation both to the objects, which they have to study, and also to the materials, and the manipulation, by which they have to represent them. The Academy admits the need of having a Professor of Perspective, which relates to size, form, and distance,—one department of optics; but with regard to light and shade, reflection, transmission, refraction, aberration, absorption, and decomposition of light,—and production, combination, harmony, discord, and contrast of colours—each and all of which are factors in the art and practice of painting—the student, if he is taught anything, is taught only empirically, as a matter of custom or authority, rather than on any scientific basis. And when we come to closely examine the paintings of different artists, even the most eminent, we find not only various modes of treating the same subject, but often more or less traces of uncertain or ineffective work, vitiating the effect which they intend to produce, and marring the perfectness of the imitation of Nature. I could add much more on this subject: but this is not the place; and I must apologise for so long a digression from what belongs to the history of my youth.

In these drawing lessons, I was joined by several of my former fellow-students at Edinburgh; and we often had pleasant companionship in visiting the Jardin des Plantes, Père la Chaise, St. Cloud, Versailles, and other objects of interest in or near Paris. They, and others afterwards, made up a pretty numerous British party of advanced students, who attended the hospitals and classes together, when the season began. It is pleasant to record their names, although very few survive to the present day. Robert Young, after-

wards of Camberwell; Prestwood and Henry Lucas of Brecon; Charles Morehead, afterwards Professor of Medicine in Grant College, Bombay; Francis Millet Boase of Penzance (nephew of Sir Humphry Davy); Charles Foster Barham of Truro; Henry Riley of Bristol; Thomas Tatum of St. George's Hospital, and his friend, A. Fisher; Frederick Leighton; Thomas Wise; Henri Lombard of Geneva; Edwin Harrison; and James Crawfurd Gregory, son of the celebrated Professor of Medicine at Edinburgh. The last three were my most constant companions in the hospitals, remaining after the others had left Paris.

I had letters of introduction to professors and other persons of consideration; but of these, two only produced any result worthy of record. One was to Professor Majendie, whose reputation, in connection with Experimental Physiology, was then in its zenith. He received me affably, speaking in English, and invited me to attend his matinées for physiological observation and discussion. But they were held on Sundays, and at the time of the morning service; and as I respected the observance of the Sabbath, as I had been taught from childhood, I did not avail myself of the invitation.[1] The temptation was great, as it would have given me the opportunity of taking part in work, and with men, in which my reading had especially interested me: but later I did not regret my decision. I afterwards attended M. Majendie's course of Experimental Physiology; and found it very instructive, and for the most part not deserving of the impu-

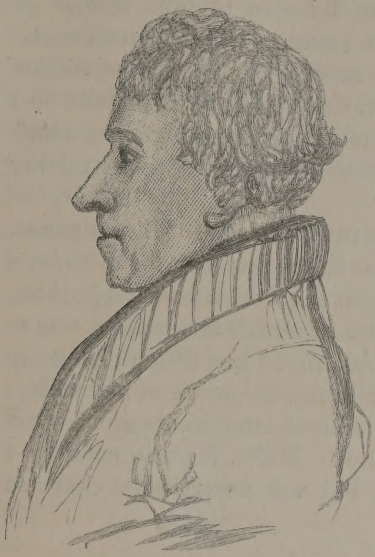
[1] Although it is a question among Christians whether the literal observance of a sabbath is enjoined by the New Testament, there seems to me to be no doubt that the appropriation of a day of rest to the spiritual service of God, and to the refreshment of the bodies and souls of men, is a blessed privilege, inculcated in the law of Divine love too plainly to be set aside. I may have another opportunity to recur to this subject: but lest it should seem that I make a merit of my conduct in this instance, I would record another, later in life, in which I was a delinquent. I was travelling on a Sunday from London to my wife's cottage near Chepstow. My fellow-traveller in the train was a former pupil; and he set to work to interest me in a railway in the Forest of Dean, in which he was concerned, and induced me to take a large number of shares. The undertaking, although promising, did not prosper: yet under the advice of an eminent firm of solicitors, I was persuaded to increase my holdings, which I did eventually to the amount of upwards of 12,000*l*. It was all lost. Such was the end of a worldly transaction undertaken on a Sunday.

tations of wanton cruelty which have been brought against him; yet I did feel that there was, on the part of the operators, a want of that humane anxiety to spare all unnecessary animal suffering, which has guided, and I feel sure, ever will guide, British physiologists in their investigations.

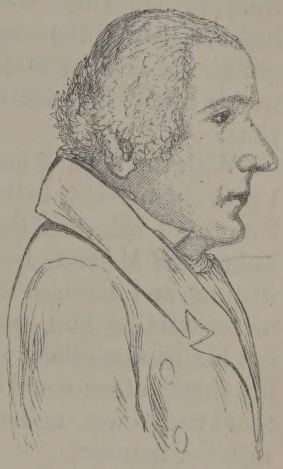
Another introductory letter was more successful in its results, by making me acquainted with Dr. W. F. Edwards, author of one of the most important physiological works of that day: 'De l'Influence des Agens Physiques sur la Vie.' He was of English family, a native of one of the Oceanic Islands, but became naturalised in France. He read my thesis with discriminative appreciation; and gave me encouragement and useful advice in many matters. He introduced me to the Institute of France, where the Academy of Sciences held its meetings. To these we used frequently to resort; and it was most interesting to see the great men of science, whose names were so familiar; and later, when the language became more familiar, to listen to their discourses. Among these, the following recur to my recollection:—La Place, Alex. Von Humboldt, Cuvier, Gay-Lussac, Arago, Ampère, Vauquelin, Geoffroy St.-Hilaire, Thénard, De Blainville, Dupin.

In my early visits to the salle of the Institute, not understanding enough of the language to profit by listening, I had the audacity to take the opportunity of improving my drawing faculty, by sketching likenesses of these savans; and rude though these attempts were, I succeeded in some instances sufficiently to render them quite recognisable by my friends. Made at a time, long before photographs were thought of, and when outline and profile drawing was seldom applied to portraits, these original pencillings may not be altogether worthless, and may help to relieve the monotony of verbal narration.

At the end of this summer, I attended a popular course of Lectures on Astronomy, by Professor Arago, at the Observatoire, beyond the garden of the Luxembourg. They were delivered in the open air, and were made attractive by his Gascon vivacity and clever illustrations.



M. Le Marquis de la Place,
Author of the 'Mécanique Céleste.'



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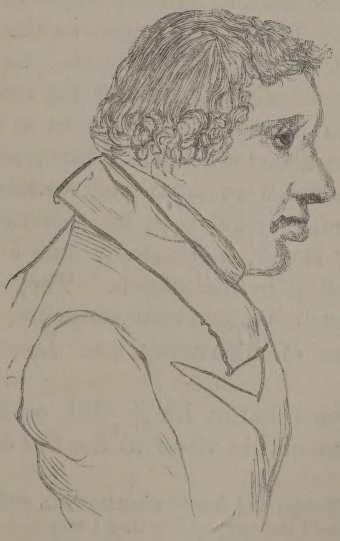


M André Marie Ampère.

Before the summer was over, I began to take lessons in Italian, which my knowledge of Latin rendered much easier than French: but when the studies of the winter session began, I had no time to prepare for my Italian master: so I got him to give me instead, instructions on the guitar, which were a mere recreation for the hour, without occupying further time.

With the hope of improving my knowledge of the language, I paid several visits to theatres at this time; and at the Théâtre Français I witnessed the acting of the most famous tragedians, Talma and Madame Duchesnois. Talma's articulation was so distinct, and his voice so sonorous, that I had little difficulty in understanding him, and appreciating the power of his acting: but his gesticulations were *too French*, and in excess of what my English taste could approve of. Mdlle. Mars in comedy, I could not so well understand; but was nevertheless charmed with her manner.

Although I did not begin regular hospital attendance till October, yet with some of my companions, I paid occasional visits to some hospitals, to see the practice of the most remarkable men. Thus I saw Dupuytren at the Hôtel Dieu; who almost swore at me, because I objected to be called Blaise, instead of Blasius,[1] when he asked my name: so much for his temper. But he was most courteous to Sir Astley Cooper, who visited him about that time. Roux and Boyer, the surgeons of La Charité, were remarkable contrasts to one another. Roux, tall, spare, very quick in his movements, and rapid in his utterance; Boyer, very stout, and I think short, and slow and drawling in his speech. They were both spoken of by the French as first-rate surgeons; but the opinion of the disciples of Abernethy and Lawrence was not so favourable.

I accompanied Baron Larry (the celebrated surgeon of Napoleon) in one of his visits at the Val de Grâce Hospital;

[1] I was called Charles and James after uncles; and my Father, who was a staunch Tory, to avoid the supposition that I was named after Charles James Fox, who was the foremost Whig when I came into the world, added the name Blasius, after the saint on whose day I was born.

and have a painful recollection of the mode in which he exhibited his method of cupping. After exhausting the glass with burning cotton, the incisions were made by drawing a razor deliberately, and artistically, in a cross-bar pattern, across the flesh, on which the exhausted cup was again applied. The patient endurance of the soldier equalled the cruel *sangfroid* of the operator.

CHAPTER VI.

WINTER SESSION. HOSPITALS AND LECTURES. 1825–1826.

La Charité—Clinique of Laennec—His Views and Position. Andral, Fils—Clinique of Lerminier. Louis. Chomel. Lectures at the Sorbonne—Thénard on Chemistry (with portrait)—Gay-Lussac—Physics (with portrait)—Pouillet—Physics (portrait)—De Blainville—Comparative Anatomy: successful Lecturer. Laennec with his Pupils—Portrait—His Teaching on Auscultation more dogmatic than rational—Value of his discoveries—His Stethoscope—Its Use and Disuse—Its true principles discussed—Note, Author's and other improvements—Laennec's knowledge of Acoustics and of Pathology imperfect, but power of observation quick and wide, and proficiency in his Art wonderful—Want of clearer knowledge of Subject. Visits to Hospitals—Salpêtrière, Enfans Malades and La Pitié—Author's second attack of Whooping Cough: Remarks on Nature and most effectual treatment—Dr. Burger's Observations in 1883.

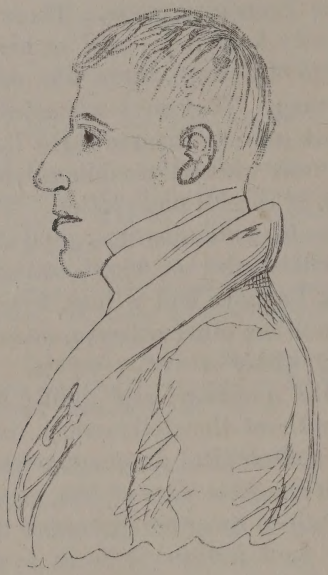
The commencement of the session of the Schools and Hospitals inaugurated our systematic winter work. After due consideration, I resolved to make the hospital of La Charité and the clinique of Laennec, the chief field of my work. His visit was from ten to twelve in the forenoon, giving ample time for the examination of patients, and the demonstration of the signs of auscultation to the students. M. Laennec at the bedside always spoke in Latin, to avoid alarming the patients by the description of their maladies; and also for the benefit of many foreigners attending the clinique, who might not understand French. The visit was terminated by a clinical lecture in French; unless there was a *post-mortem* examination, which he superintended, with the safeguard of a long pair of forceps in his hand, and the free use of chloride of lime in the room. He was always fearful of infection, and was not aware that he was already consumptive. He died of phthisis little more than a year after. Yet although very thin, and sometimes becoming exhausted with long exertion, his vivacity

and quickness of perception and intelligence were unimpaired, and showed the integrity of those wonderful powers of observation and reflection, by which he had become the discoverer of a new system and a new art.

We counted ourselves fortunate in thus having the personal instructions of the great master, when most matured by the latest observations and practice. It was surprising how little he was valued by French students. Those who attended his clinique were chiefly foreigners; and at his lectures on Medicine at the College of France, there was only a sprinkling of his own countrymen. They were attracted more by the impetuous Broussais, who captivated them by a grand idea—a sweeping hypothesis, without troubling them with the details of objective facts, or careful observation. Broussais generally ascribed diseases to inflammation; and his treatment lay chiefly in different modes of blood-letting and starvation. I soon found that Laennec had a bias, from his opposition of these views, to go to the other extreme, and deny the existence of inflammation, where it really exists. Andral took an eclectic view of the question; and guided by Laennec's auscultation, (only without the stethoscope), compared with the investigations of pathological anatomy, succeeded in giving a more rational and complete view of the processes of disease, than had been attained by either Broussais or Laennec before him. It was my good fortune to be in a position to profit also by his labours, at the same time that I was attending the wards of Laennec.

M. G. Andral (or as he was commonly called, Andral, Fils) was not at that time physician to the hospital; he was, like myself, a student attending the clinique of M. Lerminier, one of the physicians who had the largest number of patients, and who made his visit at seven A.M., without, as may be supposed at that hour, any large following of students. But this was the field, from which Andral collected the materials of his 'Clinique Médicale;' and as M. Lerminier left to him the entire management of the *post-mortem* examinations, he was enabled to conduct his observations in the most conclusive manner. This was my great school of pathological anatomy; and in the eight or nine months of my attendance, I gained

more knowledge than could have been obtained by the same number of years in the hospitals of our own country. But it required no little zeal and resolution to persevere in this work. We had to rise long before daylight; and endure the winter cold, in wards and offices without fire; and then return shivering to breakfast between eight and nine. My friends,



M. G. Andral, Professeur de l'Anatomie Pathologique, &c.

Lombard of Geneva, and Edwin Harrison, were my most constant companions in this arduous work; with only two or three French students in addition.

When M. Andral completed his work, and ceased to attend, I used to go round with Dr. Chomel at the same early hour.

He was a fair auscultator; and a sensible physician; and I found his clinical remarks and lectures very instructive.

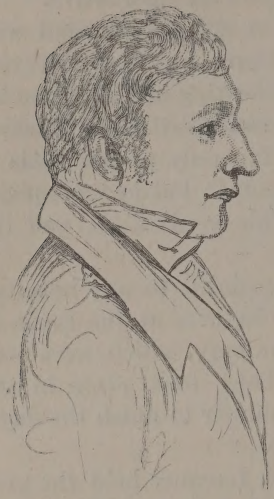
In the same ward, we often saw a tall solemn man with spectacles, diligently taking notes alone, not accompanying the physician. This was M. Louis, collecting materials for his elaborate work on Phthisis, which established his reputation for statistics; these he held to be the only proper basis of medicine. In that line he became famous; but he was equally remarkable for the gloominess of his predictions, and the inefficiency of his practice.

Although Andral was not yet appointed to any hospital, he was Professeur agrégé, and gave lectures at the École de Perfectionnement on Pathological Anatomy, which were well attended and highly interesting. They took place in the evening, and we went to them after dinner to finish the day's work.

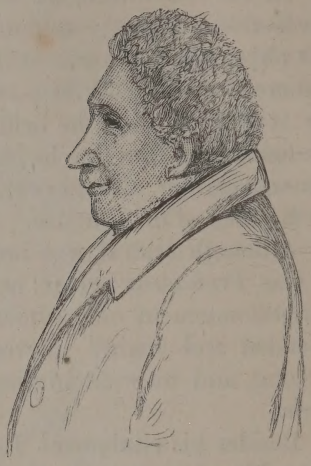
Besides his clinique at La Charité, Laennec held the professorship of Systematic Medicine in the College of France. I attended his lectures there also; and although they were not first-rate, I took notes of them in Latin: for finding the study of French and Italian was making me forget my Latin, I resorted to this expedient to regain it. I have lately found a book of these notes, containing also some of the pencil sketches in which I endeavoured to preserve likenesses of my old teachers. The most distinguished of these were professors at the Sorbonne; and in the afternoons I found time to attend several during this winter.

The Lectures on Chemistry were delivered by M. Thénard (well known by long association with Gay-Lussac)—red-faced and uncouth—not attractive enough to retain me long. It was otherwise with the course on Physique, by Messrs. Gay-Lussac and Pouillet. The former gave the impression of knowledge and ability; but as a lecturer, he was far surpassed by his colleague, M. Pouillet, who was eloquent and clear, and made both his demonstrations and his explanations delightful to his large audience.

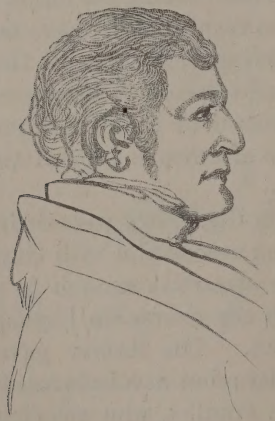
Another admirable lecturer at the Sorbonne, was M. de Blainville, Professor of Comparative Anatomy, whose course came on during the spring. I regret that I have no likeness



M. Louis Joseph Gay-Lussac,
Professeur de Physique.



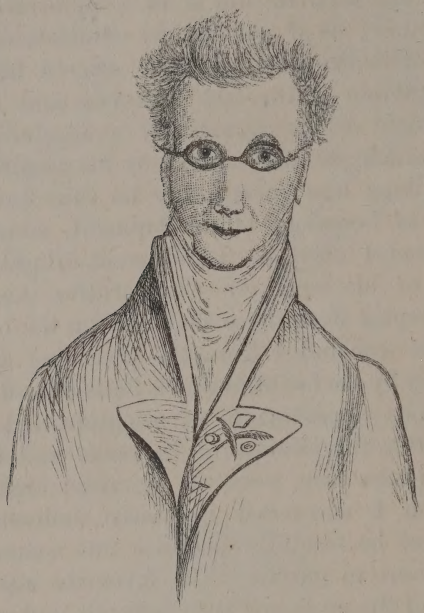
M. Louis Jacques Thénard,
Professeur de Chimie.



M. Claude Jervais Mathias Pouillet,
Professeur de Physique.

of him: but really his vivid descriptions and rapid illustrations on the black board, kept pens and pencils so busy, that we had no time for anything else. I never knew a lecturer so clever at the black board. Sir Charles Bell showed his artistic skill in this way; but then he did it in a deliberate, and rather pompous manner; as if pausing, in admiration of his work. But De Blainville drew as fast as he uttered his words; and on the completion of the last sentence and the finishing stroke, he would deliver himself of a concluding '*agh*' of satisfaction, which was fully shared by his admiring audience. It was surprising how successfully he thus gave expression to his views of homology of development, which were then attracting general interest. I took great delight in enriching the margins of his book on 'Comparative Anatomy,' with illustrations copied from these chalkings on the board.

It may be concluded from the preceding sketch that I profited largely by the facilities which Paris offered for improvement in various departments of scientific and professional knowledge. But the clinique of Laennec, and the study of auscultation under him, were my foremost objects; and by close attention I succeeded in fairly understanding and practising what he taught. Laennec was somewhat partial in his attentions to pupils. His favourite was Dr. James Gregory, son of the professor at Edinburgh, and my particular friend. To him he made a point of showing everything, and often called on him to explain matters to the other English pupils—much to the annoyance of the few French in attendance. On Dr. Gregory's leaving Paris, Laennec wrote a very high testimonial in his favour. On my departure, somewhat later, he told Dr. Edwin Harrison and myself that he should mention our names in the preface of the forthcoming edition of his work, among those who had become proficient in the art of auscultation. This we considered as a more complimentary testimonial than any written merely for ourselves. At the same time he asked us to tell him of any others, whom we might know, as having attended his clinique and obtained a good knowledge of auscultation; as he was anxious to do them the same justice. I mentioned the names of Dr. Thomas Hodgkin and Dr. Alexander Urquhart, whom I knew



R. T. H. Laennec,
Professeur Royal de Médecine au Collége de France. Prof. de Clinique à la Faculté de Médecine de Paris. Chev. de l'Ordre Royal de la Légion d'honneur, &c.

to have studied successfully under him; accordingly their names, with ours, appeared in his preface.

It is with no little satisfaction that I am able to present to my readers a real likeness of Laennec, just as he appeared in making his visit at the clinique of La Charité. As might be expected, the drawing is faulty; but still it has succeeded in giving somewhat of his fine sharp intelligent features and amiable expression of countenance; and, with his ordinary costume of straight cut grey frieze coat, and embroidered decoration, it may be acceptable, as a reminiscence of the celebrated inventor and teacher of auscultation.[1] It was in this capacity that he was best known in the clinique of La Charité. He had been a great worker and writer in Pathological Anatomy: but little of this came out in his clinique. There, he was full of the art of auscultation in Diagnosis, which by his own experience he had worked out and clothed in a new phraseology, and taught on the authority of his own experience and knowledge. These were marvellously large, and reflected great credit on his industry and powers of observation, as well as on his intelligence and inventive genius: but it is another question whether they quite warranted the dogmatic precision, which he tried to give to the rules of his new art, as if it were complete and decisive, instead of tentative and progressive. Yet the chief discoveries of auscultation, and its large development, were undoubtedly his, and have placed him in the foremost rank among the benefactors of mankind. To these, as well as to his personal teaching, I owe not only some of the most valuable knowledge that I have ever acquired; but also the opening up of new avenues of knowledge, which will be inexhaustible till the end of time. It was the new idea of bringing another sense—the sense of hearing—to aid us in investigating the organs in health and in disease, and, through studying its indications, learning as it were a new

[1] The lithographed medallion profile, which appeared in some editions of Laennec's works, was, in my opinion, quite a failure. He showed it to Gregory and myself at one of our last visits; and I could not compliment him on the likeness. The able engraver, who has taken the trouble of reproducing my rough sketches, has fairly succeeded in preserving the likenesses; but he has not materially mitigated their faults, which are those of an unpractised amateur.

language, which would tell us of their changes in condition or motion,—that gave vastness to the discoveries of Laennec, and would render them fruitful far beyond his own share in them.

But of the many who followed the clinique of Laennec, those only, who were constant in their attendance, attained any proficiency in auscultation. The power of listening to, and distinguishing, the various sounds, and of interpreting them as signs of disease, is not easily gained: it is to be acquired only by long and careful practice; and by a due exercise of common sense as well: which helps to a better understanding of the object of study. The management of the stethoscope was a stumbling-block to not a few: the French generally disregarded it, and applied the unassisted ear, which in many instances answers very well: but in others it is less distinct in its results, as well as being often impracticable. There is no doubt that Laennec exaggerated the superiority of mediate over immediate auscultation; and his notions on the construction and form of the stethoscope were quite crude. In general he maintained the sufficiency of his simple cylinder of wood, perforated and hollowed out at the pectoral end—whether conically or parabolically it did not matter—and fitted with a stopper, to be used for certain purposes. On one occasion, during my attendance, he found it necessary to modify his instrument. This was when Sir Charles Scudamore visited the hospital to take lessons on the new instrument. Laennec was assiduous in his demonstrations; but for some days, the worthy knight could hear nothing. On further scrutiny, it was found that the tragus of his ear was uncommonly large, and by the pressure of the flat end of the stethoscope, completely stopped his ear. Laennec suggested the obvious remedy of slightly hollowing the flat end. Sir Charles's ear was thus opened: he returned to London rejoicing: and shortly after, published a pamphlet in favour of auscultation. The further enlarging the ear end of the stethoscope was a change acceptable to many: but the greatest improvement was made by Piorry, in reducing the stem of the instrument to the thickness of a finger; and when

thus made portable, it was found to convey the sounds quite as well as the solid cylinder.[1]

It was not only respecting the stethoscope, that the followers of Laennec began to exercise their reasoning powers on the matters that he had taught them; but also on the true nature and meaning of the physical signs, and on their relation to the pathological changes which produce them. In hearing his attempted explanation of several of the phenomena of auscultation, I soon found that his knowledge of acoustics was by no means profound; and, clever as he had been in tracing the signs empirically, he was not equally successful in explaining them rationally; so that the practice of auscultation was a matter of memory more than of reasoning. Yet it appeared to me that physical signs must be amenable to physical laws, and that a knowledge of those laws, so far as attainable, would be the best guide to a knowledge and understanding of the signs, and of the causes, which produce them. This train of thought led me to attempt something which might serve as a guide to the better understanding of the works of Laennec, and as an aid to students of auscultation and

[1] In the early editions of my *Rational Exposition of the Physical Signs of Diseases of the Chest*, I suggested various improvements in the construction and use of stethoscopes; but that, to which I attach more importance, is the adoption of the trumpet-shaped expansion for the pectoral end, which I first described in the *London Medical Gazette* of 1842, p. 400. This is the form of stethoscope which I have used ever since, with entire satisfaction; except in its liability to get broken, when made of wood, which is the best material. In a paper *On the Acoustic Principles and Construction of Stethoscopes and Ear Trumpets*, in the *Med. Chir. Trans.* for 1874, I again described this stethoscope, and recommended that it should be made of *ebonite*. I now have to add, that on further trials, ebonite has disappointed me by its brittleness, being nearly as liable to break, as wood. Metal would be convenient for its strength and portability; but it is unpleasantly cold for application to the bare chest, and not altogether free from the ringing noise of its material. If we could get it worked as it is in Japan, *papier maché* would be the best material for both stethoscopes, ear-trumpets, and audiphones. At the meeting of the Royal Medico-Chirurgical Society, at which my paper was read, I had the opportunity of showing to the late Dr. Leared, that I had anticipated him in the invention of a binaural stethoscope; but his was much better than mine, through the addition of the india-rubber spring. The binaural instrument has some advantages in facility of application; but it by no means transmits the chest sounds so simply, or faithfully, as the straight tube. I could never avail myself of its use; for during the last twenty or thirty years, the hearing of one ear has been defective. I have found the same to be the case, with many of my brother auscultators.

pathology; and the result appeared in the year 1828, in the 'Rational Exposition of the Physical Signs of Diseases of the Chest.'

After the termination of the clinique at La Charité, I paid visits to other hospitals, but for no continuance. I saw M. Esquirol in charge of mad women at the Salpêtrière; and M. Guersent at the Hôpital des Enfants Malades. Making the visit to the latter in the early morning, with an empty stomach, I caught whooping cough (although I had it in childhood) and did not get rid of it for two months. The paroxysms were very severe; sometimes attacking me in the street, and obliging me to hold by a lamppost. No doubt I was in a state of exhaustion and nervous susceptibility, from a long season of very hard work.[1]

[1] As in all probability this is the last work that I shall ever publish, I do not like to lose the opportunity of putting on record the unusual success which I have had in the treatment of whooping cough. As I always taught in my lectures, I consider the disease to consist in a specific inflammation of the mucous follicles of the trachea, which throw out a peculiar infectious matter (probably microbic), which excites the nerves and muscles to convulsive paroxysms to expel it. At the onset, there may be catarrhal inflammation as well, with more or less fever, requiring antimony and other antiphlogistic remedies; but with them, and after them, so long as the convulsive cough lasts, it is most effectually treated by applications, or inhalations, reaching to the seat of the disease itself. Dr. Horace Green told me that he succeeded in curing whooping cough at once, by sponging the interior of the trachea with strong solution of nitrate of silver; and it is quite intelligible how an agent so potent would succeed in destroying the specific poison of the disease. But my trials of that mode of treatment convinced me that it is too violent to be safe. We have gentler means of obtaining the same end, and of at the same time calming the morbid nervous excitement. The chief of these is chloroform. From 20 to 60 drops (according to the age of the child) held for inhalation to the nose and mouth, at the first onset of the coughing fit, and repeated if necessary two or three times, usually stop the cough, and produce sleep: and whatever checks the paroxysms, tends to cure the disease: as they become less frequent, they soon cease altogether; and I have known several instances in which whooping cough has thus been cured in a few days. The chloroform would seem to have not only its soothing influence on the nerves and muscles, but an alterative action on the morbid follicles. And where the disease does not yield to the chloroform alone, inhalations containing carbolic acid, creasote, or liquor carbonis detergens, should be used several times a day, with a view to destroy the specific matter, which is the root of the malady. I shall not lengthen this note further than by remarking that the modes of treatment which have the common reputation of being successful in whooping cough, would seem to act in a similar manner. Such is that by large doses of nitric acid, or of alum; and by the breathing the air of gasworks.

The only other hospital visited during the summer was that of St. Louis, for the clinique of M. Biett on diseases of the skin. His lectures were good and very practical; following Willan and Bateman's arrangement; and always speaking in high terms of the general eligibility and success of English modes of treatment.

After the termination of my studies in Paris, a few weeks were devoted to recreation and amusement among the sights and objects of interest in the gay city and its suburbs; and the enjoyment of these was greatly enhanced by the society of two sisters, a brother, and other members of my family, who joined me before my return home, after a sojourn of fourteen months.

Since the above note was written, I have seen in the *British Medical Journal* of January 27, 1883, the following paragraph :—

'Dr. C. Burger, of Bonn, in the first number of the *Berliner Klinische Wochenschrift* for this year, describes at length the special micro-organisms of pertussis, which he states can be found in any specimen of whooping-cough sputum. They appear under an immersion lens, as small elongated elliptical bodies of unequal length, the smallest being double as long as broad. Under a very strong power, transverse subdivision can be detected in the longest specimen. They may form chains or groups, but are generally isolated and scattered singly all over the field. Dr. Burger concludes that this bacillus is the actual producer of pertussis, because it is not found in any other kind of sputum; because it is so abundantly produced in whooping cough that its influence cannot be doubted; because its abundance increases in direct proportion with the severity of the disease; and because the course and symptoms of the whole disease are best explained by the development of this fungus.'

CHAPTER VII.

FRIENDS IN THE COUNTRY AND IN LONDON. VISIT TO MADEIRA WITH A PATIENT. 1827.

Practice at Home, and among Relatives—First Feelings of Anxiety and Responsibility. Good Friends and Connections at Heytesbury, &c.—Dr. Fowler of Salisbury—Dr. Brabant of Devizes—Thomas Moore. Visit to London—Dr. James Clark, and Dr. John Forbes—Their Friendliness—Their Criticisms of London Physicians and Practice—Dr. Clark's Acquaintance with the Author's Aunt at Rome. Author to take Charge of a Patient going to Madeira for Throat Affection—Consultation and Orders from his London Physicians—Suggestion of Auscultation in Vain—In Charge of Patient at Falmouth—Discovered to be Consumptive—Perplexity about making it known—Reference to London Physician without Answer—Painful Reserve—Voyage to Madeira in Fourteen Days in Sailing Brig—Phosphorescence and other sea-sights—Arrival at Funchal in Summer heat—Removal to Camacha—Patient attacked with Perforation of Pleura—Struggle for Life—Temporary Recovery—Death six weeks after arrival—Conclusion: and comparison with similar cases in 1871—Scenery of Madeira—Return with the Widow—Produce from the Island—Wine matured in England—Account rendered to Physicians in London.

I HAD now been living the life of a student, with hardly any intermission for six years; and I thought it time to turn my thoughts to practice: but as it was my Father's wish that I should eventually settle in London as a physician, for which I was still too young, I decided to pass a year or two among my relations and friends, with the chance too of getting some travelling appointment, for which I was well qualified, and which would give me useful and profitable employment; as well as enable me to see more of the world. Nor did I wait long, for beginnings in the way of practice. Some good hits in diagnosis and successful treatment, soon brought me a little reputation; and young as I was, I got a few consultations among the junior practitioners. What was still more satisfactory, was that some of my relations began to have faith in

me; and I became endeared for ever in the family of an uncle, whose daughter I watched, and by God's blessing brought through a dangerous illness, after the practitioner in attendance had given up hope. But this is no more than what I suppose most doctors have to tell of their early successes: I only mention it to prove that I was sometimes making myself useful at a time, when generally I seemed to be enjoying a holiday. These initial experiences also gave a foretaste of the anxieties, which a conscientious man must feel in undertaking the responsibilities of his profession; and which, without disturbing his equanimity, should render him earnest and painstaking in the performance of his momentous duties. A hopeful temperament helped me under some discouragements; but I had to learn that, even with the most skilful and diligent use of means, an absolute reliance on the overruling Providence of God is the only true source of confidence and peace.

After my long absence, it was very agreeable, as well as useful, to renew acquaintance with my father's numerous friends in Wiltshire. It is unnecessary to mention more than a few of these. With the family of Lord Heytesbury at the Manor House, we were always on intimate terms. Lord H. himself was generally absent on his various diplomatic missions: but his brothers, Captain and Colonel à Court, were at home and always friendly, taking much interest in my prospects. The daughter of the latter, then a little child, long after married the Hon. Sidney Herbert, afterwards Lord Herbert of Lea. Many years after, he and his mother, the Countess of Pembroke, and many members of their families, were long my patients in London. The Hon. Philip Pleydell Bouverie, brother of the Earl of Radnor, married a sister of Lord Heytesbury: he was a banker in London; and I banked with him and his firm through three generations, to the present day.

Dr. Richard Fowler, F.R.S., of Salisbury, was a much valued friend. For many years he was the most eminent consulting physician of the county; and having formerly devoted much time to scientific pursuits, (especially in connection with animal electricity) he was particularly interested in my work and progress. The failure of his sight obliged him

to retire from practice: but for many years I used to see him at the meetings of the British Association, quite alive to the discoveries of the day, when he was long past ninety years of age; always faithfully accompanied by his clever wife (sister of the poet Bowles), who, I have heard, has only recently died at a very advanced age.

Dr. Brabant I have already had occasion to mention. He was now practising at Devizes as physician, after a prolonged continental tour, in attendance on Lord Bruce, son of the Earl of Elgin. It may be imagined that after his long travels, and my enlarged field of study, we had much to say to each other, and that our intercourse was most pleasant. He introduced me to Thomas Moore, the poet, who was living in his neighbourhood; and I heard him sing some of his own songs. He had an argument with me about some realistic paintings of interiors at Paris, which had struck me with admiration. He expressed utter contempt for that style, and said that Sir Thomas Lawrence agreed with him. There seems to be a concord among connoisseurs of high art, to condemn everything that is too natural. I was indebted to Dr. Brabant for an introduction to Dr. (afterwards Sir James) Clark, who after long residence in Rome, had just settled in London; and was likely to help me in my quest of employment as travelling physician.

In the spring of 1827 I went again to London and took lodgings in Golden Square, with a view to revisit the hospitals, and increase my acquaintance within and without the profession; and to be on the look-out for any eligible employment that might offer. My knowledge of French made me an acceptable guest in the houses of Dr. Maton, Mr. Aylmer Bourke Lambert, and others, who often had foreigners at their receptions. The introduction to Dr. James Clark was most opportune. He was most friendly, and took the greatest interest in all that I told him of my studies in Paris, and expressed his regret that he had not been able to pursue a similar course. He was full of the forthcoming new edition of his work on Climate, and was glad of assistance in its composition; for he was not a ready writer. He very much approved of my intention of writing a little work on Ausculta-

tion, to make that of Laennec more intelligible; and he very soon introduced me to his great friend and ally, Dr. J. Forbes, the translator of Laennec. He presented almost a contrast to Clark in energy and industry, and in the cheerful *bonhomie* of his character; and I think the influence which they exerted on each other, was mutually beneficial. In one matter, however, they were thoroughly agreed: in the low estimate which they formed of the state of medicine and medical practice in London. No doubt there was much ground of truth in their adverse criticisms. The chief practice was in the hands of the apothecaries and of a few fashionable physicians, whose knowledge and scientific skill did not rise much above that of the apothecaries, however adorned they may have been with the graces of literature and the polite arts. And the predominant evil in the medical practice of that day, lay in the system of over-drugging and over-feeding which generally prevailed. Against this the censures of Clark, Forbes, and others were forcibly and rightly directed; and it was not long before the profession, and the more enlightened part of the public, began to acquiesce in the necessity of reforms.

But neither Dr. Clark nor Dr. Forbes was qualified by their antecedents to become leaders of reform in the practice or profession of medicine. After a short college career, they both became engaged as naval surgeons, with few opportunities for either study, or experience; and in their subsequent spheres of action—Dr. Clark among the English visitors at Rome; and Dr. Forbes in small country practices in Cornwall and in Sussex—there could be little scope for a broad foundation of knowledge. Dr. Clark, in his residence at Rome, had contracted some Broussaian notions as to the predominance of inflammation in disease;—in opposition to the Brunonian views advocated by the Italians; and in his practice he was therefore inclined to depleting and lowering measures. I have reason to know that London experience led him much to modify these views; and although always insisting on the necessity of limitation and regulation of diet, he soon came to see the necessity of sustaining the powers of life, even in inflammations. Finding his want of hospital experience, he obtained the appointment of Physician to the

Parochial Infirmary of St. George, Hanover Square; in the duties of which he often asked me to assist him; as he did sometimes also in his private practice. This, although never extensive, was increasing, especially in connection with questions on Climate; the subject with which his name had become identified. His adoption of the practice of auscultation, then little known, was also in his favour; and his plain but gentle manners, and earnestness in inculcating his advice, attached his patients strongly to him. Although my introduction to him was through a letter from our mutual friend Dr. Brabant, he and Mrs. Clark had long been intimate with an aunt of mine, Mrs. H. M. Williams of Tidenham, in whose apartments in Rome (as she told me) Dr. Clark was first introduced to Prince Leopold, then a visitor at Rome. If this was correct, the event may be counted as the first link in the chain, which eventually attached Sir James Clark to the Royal Family of England.

Dr. Clark soon succeeded in getting me an engagement as travelling physician to a gentleman, who was recommended a sea voyage, on account of 'delicacy of the throat.' He was not a patient of Dr. Clark's; but was attended by two of the leading physicians of the day, whom I was to meet in consultation, to hear their views and instructions respecting the patient. They pronounced him to be free from disease of the lungs, and to be suffering only from chronic inflammation of the trachea, and weakness; which, they fully expected, continued careful treatment, with the aid of sea-air, would be able to remove. My duty was only to receive instructions, without further question: but I did presume to ask whether the chest had been examined with the stethoscope? The reply was in the negative, with as much contempt of manner as politeness would allow. The senior consultant in this case died soon after, utterly incredulous of the value of auscultation. The junior, one of the most fashionable physicians of this century, wiser in his generation, became a believer, when belief in it came into fashion.

I was not to take charge of my patient until he should be about to commence his voyage; so I joined him and his wife at Falmouth, before the end of July. They were an interesting

young couple, having been married only three or four years, and were leaving their little girl in England. Mr. —— was heir presumptive of an historical Yorkshire family; and had been a short time in the army, but his health obliged him to retire. I found that he had been at Winchester College with one of my brothers; at the time also when my cousin (afterwards archdeacon of Cardigan) was one of the masters. So we soon became intimate; and I found both him and his wife amiable and refined. But now began my anxieties about him. I had received the instructions from his doctors: I now had to examine him, for myself, and I was grieved to find that he not only had disease in both lungs, but that it was considerably advanced; there being a cavity in one lung, and signs of active disease in the other, whilst his loss of flesh and strength, fever, night sweats, and other symptoms, plainly showed the progress of the constitutional disorder. And in this state he was to 'try a sea voyage,' first to Madeira; and if he bore it well, to go on to Brazil, or other South American port, and this in the hot month of August! On thinking back on this extraordinary advice, one is lost in astonishment how it ever could have been offered: still, at that time, coming as it did from the highest authorities, who was I, to presume to question it? But this course I did take. I wrote to the physician, who usually attended him, a statement of the result of my examination; and left it for him to decide whether any change should now be made in the plans. There was ample time to reconsider the matter, as the packet was not to sail for ten days. The only reply that I got, was through Mr. —— who told me that Dr. —— desired him to thank me for my letter. So I was constrained to conceal my misgivings, and acquiesce in the arrangements that had been previously settled. But I was obliged to modify the treatment, by diminishing the quantity of wine, and omitting the strong tonics, which he had been taking: the result was a great mitigation of cough and of other symptoms from which he had been much suffering. This improvement increased their confidence in me; and we seemed to go on most pleasantly. They had an abundant assortment of books; and they took an interest in my drawings, and studies in

natural history and geology, for which the coast of Cornwall supplies a variety of objects. But long after, Mrs. —— told me that, although she found me agreeable, &c., she never could 'get on with me,' because I was so reserved: and no wonder! Under the control of professional etiquette, I could not be frank and open; until the pressure of circumstances should break through all concealment; therefore I had to remain reticent, and to refer back to the opinions and authority of the London doctors, rather than obtrude those of my own.

Then came the voyage; at that time performed by the mail sailing packets, mostly brigs, or barques, taking from ten to twenty days for the transit. In our case speed was no object. In fact I feared more the heat of the island, than that of the ocean. We had a fine passage of fourteen days; and except the few first hours of sea-sickness, and a few days becalmed in the Bay of Biscay, the voyage was very enjoyable. We had the usual ocean sights, of an occasional shark pursuing flying-fish or Bonitoes; a few pairs of blowing grampus-whales; and at night the beautiful phosphorescence of the sea, which I was delighted to trace for myself to certain gelatinous bodies which I found in a bucket of sea-water. The phosphorescence I observed to occur chiefly after a day of sunny brightness and calm; and very little after a cloudy day or disturbed sea—the light being derived from the sun, and given out again at night by the phosphorescent body, as in other instances of true phosphorescence. The rugged conical heights of Porto Santo, and the tabular and needle forms of the Deserta Islands were interesting objects for my pencil on the approach to Madeira; and early on a following morning, we found ourselves in the not very safe harbour of Funchal, with its dark sloping shore, and brown rocky cliffs, and the irregular motley town rising above, backed by a succession of dark mountain heights, showing more dingy ground than lively verdure, but bespeckled with numerous *quintas* or country houses, surmounted by the two-towered church of Nossa Senhora da Monte high up above. This is often in the clouds: but now there were no clouds. We had arrived before the hot season was over; when there had been no rain, and

hardly a cloud for many months; and all grass and most herbage were burnt up and barren.

As might be expected, the heat in the town of Funchal was intense; and it was necessary that the invalid should be taken up to the high country as soon as possible. The well-known hospitality of the Madeira merchants provided for this; and the day after our arrival, he was carried up in a hammock, the easiest method of conveyance available in the island. There are no carriages, or roads available for them. The usual mode of conveyance is on horseback; and for heavy goods, sledges drawn by oxen. The streets are paved with volcanic stone, which becomes polished by the friction of the sledges. The country roads are very rough and rocky: but it is wonderful how safely the horses tear along them, often with their drivers holding by their tail. We were most kindly received into a merchant's house at Camacha, to the north-east of Funchal, at a height of about 3,000 feet above the sea. The road was up and down a succession of rocky hills, with some large trees, chiefly Spanish chestnut, and no other verdure; for the fields were quite dried by the heat; except along the water-courses, where constant irrigation was kept up. Here I was surprised to see growing into high hedges, geraniums, fuchsias, and other flowering shrubs, which in England require the protection of a conservatory. The country house in which we were received had the advantage of one of these streamlets, which our host had utilised, not only for watering a large garden, but also by making a pool, which served as a plunge bath, a great refreshment and luxury in that parched season. It was overshadowed by a weeping willow and some fragrant shrubs; and many an hour did I spend in this comparatively cool retreat.

My patient had borne the voyage well, and was altogether easier than before leaving England: but he felt the heat trying, and was obviously not gaining strength. Still nothing alarming occurred till, about a week after his arrival, he was suddenly attacked with sharp pain in the side, which was obviously pleuritic; and not many hours elapsed before I was forced to the conclusion, that it was from perforation of the lung and the supervention of pneumothorax; that is, air

escaping from a hole in the lung into the cavity of the chest. Here then, was a catastrophe, involving, 1;—immediate danger to life from the sudden collapse of the lung, and the painful spasm of the muscles of the chest excited by the injury; and 2;—a serious complication, added to the previously existing disease in the lung. In all my anxiety and trepidation for the result, I had no doubt as to the course of treatment which the occasion demanded. I gave large and repeated doses of opium (the first combined with calomel), I applied a large blister to the affected side: and I endeavoured to do what was possible, by posture and pressure, to aid the embarrassed breathing. Of course further advice was sought for; I was most anxious for some one to share the responsibility with me: but before the doctor could come from Funchal, the patient was considerably relieved. And now the time was come, when the real nature of the case must be made known. That which had just occurred, confirmed the conclusion at which I had arrived, that serious disease existed in the lung; and no deference to authority, however eminent, could justify any further concealment of the truth. The patient and his wife received the intimation with the resignation becoming their religious profession; and they were encouraged still to hope that present danger might be averted; and that much could yet be done to retard the progress of the disease. In a week's time, such improvement did take place, so as to surprise Dr. Heineken, the Funchal doctor, himself also a poor consumptive. Mr. ——, so far from being frightened at what he had been told, wished to know further particulars of his malady; and would get me to make drawings to explain them: but he could not help often ejaculating his surprise 'that the great Dr. —— should have made such a mistake!'

Grievous as was this aggravation in my patient's condition, it was the means of relieving me from the false position in which I had been placed, and from the embarrassment of concealing the truth. It is not to be denied that there are circumstances, arising from the ignorance or timidity of patients, which make it expedient in some cases to minimise or mitigate our announcement of serious truths regarding their health; but to conceal them altogether, and still more

to flatter false hope by denying their existence, is as unwise and unfeeling, as it is immoral. It now became necessary to apprise the relatives in England of the patient's condition, and of the danger, present and future, connected with it. To the family physician I wrote a full report of the attack; and of the subsequent signs and symptoms, which left no doubt in my mind as to its nature; and although there were hopes of getting over the shock of the accident; yet with so much disease in the lungs, there could be no expectation of permanent improvement; and so it proved. The patient rallied considerably; lost all the most distressing symptoms, and retained his faculties for reading and social converse for three or four weeks: but he never left his bed; he suffered from the heat and confinement, and the appetite failed. An aphthous state of the mouth announced the approach of sinking; and he died peacefully, six weeks after his arrival in the island.

This was, then, a clear case of rapid hopeless consumption, proving fatal in a few months, in which treatment was, at that time, supposed to be of none or little avail. Yet such has since been the progress of medicine, that there is now ground for hope, that, even in such a case, the progress of disease may be more or less checked, and life prolonged, for several years. Even the severe complication which occurred here, perforation of the pleura and pneumothorax, is not always fatal. In our work on Consumption, published in 1871, I have described four cases of pneumothorax from perforation of the pleura, which entirely recovered. ('On Consumption.' By Drs. C. J. B. and C. T. Williams, p. 279.)

During the pressing necessities of such an illness, my time was so much taken up with the patient (having in a measure to fulfil the part of nurse, as well as physician), I had little opportunity of seeing the island. My walks were mostly confined to an hour or two's scramble up or down the mountain torrent. The water was too scanty to bar my steps. In fact, every drop of water is exhausted, for the purpose of irrigation, by the proprietors, who have their supply by rotation; and their eager claims are continual subjects of litigation among them. From all the great heights that I could reach, none many hundred feet above Camacha, there were various beauti-

ful views of the wide expanse of the blue ocean below. I had not time to get to the Grand Curral, the deepest valley traversing the island. Perhaps the finest scenes which I witnessed were those of moonlight nights. The moon and stars shone with dazzling brilliancy, and seemed to give more colour and form to the landscape, than the tawny blanks of daylight: the sparkling specular reflection of the Spanish chestnuts and laurels enlivening the dark masses; whilst the warm air resounded with the never-ceasing thrills of innumerable cicadæ. Clouds were hardly ever seen, until a week before our departure in the middle of September; when the approach of the rainy season was announced by wreaths of cloudy masses forming around the mountains above Funchal, to which we had descended after the death of the sufferer, to be ready for departure.

Sad indeed was this early extinction of the earthly hopes of a young and promising life, and the breaking of fond ties, which amiability of disposition and a brightness of intelligence had so deeply endeared. No human comfort could avail in such a trial; but duty, no less than sympathetic feelings, prompted me to do all in my power to help the afflicted widow in her bereavement. It is unnecessary to dwell on the further details of this engagement. We had a quick passage of ten days to England; with some gales and stormy weather in its course; which gave me the opportunity of witnessing, not without enjoyment, the wondrous sight of the gigantic waves of the Atlantic in the Bay of Biscay, now up in a mountain threatening to overwhelm us—then sinking into a vast abyss, with the little ship riding bravely before the wind; while Mother Carey's chickens walked on the stormy waters, and the screaming sea-gulls circled in the leaden sky. We landed at Plymouth; whence, after placing the widow in charge of her brother, who had come to meet her, I returned to my family at Heytesbury, who had received no intelligence of us since our departure, more than two months before; so irregular was the Post-office Foreign Packet Service at that time. I came back, too, laden with presents; consisting of flowers and fruit in waxwork, and preserved fruits, made by the nuns in Madeira. Mrs. —— had ordered them for her friends before

the calamity occurred; and this rendering such presents ill-timed, she insisted on my accepting them. I did not lose the opportunity which the merchant, our host, gave me, of ordering a supply of wine from Madeira, which then enjoyed its full reputation; and a cask of London particular, and another of Malmsey, came in the ship with us. To mature the former, it is usual to send it two or three voyages to the East or West Indies and back: but I had been advised an expedient at home, which would answer as well: that is, to keep it for twelve months in the roof of the house, exposed to the heat of summer and the cold of the winter: this was done, and it succeeded perfectly.

I shortly after repaired to London to visit the widow and family of the deceased, and render a full account of events. Nothing could be more gratifying than the manner in which they evinced their satisfaction and gratitude for my services; and their conviction that I had done all in my power to avert and mitigate this visitation. I fear I cannot say as much of the physician, who with his senior consultant, had decided on sending the patient to Madeira. He was very courteous and acquiescent; not even hinting at any dissent from my conclusions: but about a year after, when I was proposed for the Athenæum Club, on the occasion of an increase in the number of members—by postponing my name, he succeeded in preventing my election. Many years after, when my position in the profession made it inconvenient to be on doubtful terms with me, he seemed to try to make amends by sending me his works: but he had a wonderful memory; and I do not think that he ever forgot my discovery of his error in diagnosis.

CHAPTER VIII.

WINTER AT HOME. FIRST WORK ON AUSCULTATION, &c. 1828.

Attempt to explain Physical Signs by reference to Physical Laws and a sound knowledge of the Physiology and Pathology. Laennec's knowledge Empirical rather than Rational; and points in his Pathology questionable. Andral more enlightened. Laws of Acoustics not well-known—Even Definitions of Sound imperfect. Attempt to explain the Nature and Properties of Sound—Essay of Author at British Association in Edinburgh, 1834—Nature of Vibrations—Word 'Undulation' objectionable—Rational Study of Physical Signs more interesting and more instructive than Empirical—Illustrations—Crepitation of Pneumonia—Metallic Tinkling, an Echo. Sir D. Davis introduces the Author to Sir Henry Halford to whom the Work is dedicated—His Reception. Transactions with Publishers.

After this sad episode, neither spirits, nor health, were in a condition to make me anxious for any fresh engagement. I therefore passed the following winter among friends, with occasional visits to London; and then began to put into execution my design of writing an elementary work on Auscultation. I hoped to render the subject more intelligible and instructive, by studying its phenomena through a correct knowledge of structures and functions in health and in disease, and of their relation to what was known of the properties of sound. To a certain extent Laennec had endeavoured to do this: but his knowledge was rather practical than scientific; and although his great tact and experience had enabled him to make much progress in his art, his rules were more empirical than rational, and were sometimes pressed with the dogmatism of an inventor, rather than in the spirit of philosophical investigation. It was my aim, therefore, to explain the physical signs of diseases of the chest, so as to make them instructive in pathology, as well as in diagnosis. In doing this even in an elementary manner, although the work of Laennec was my chief text-book, I made use of what I had learnt from

others, especially Andral; and in pathology, I found reason in many instances to prefer the views of the latter, agreeing, as they in some respects did, with the teachings of my favourite professor, Alison.

And in thus endeavouring to make the study of auscultation easier and more instructive, my leading idea was to teach its phenomena by a reference to the laws of acoustics. But, as I state in my first chapter, 'Unfortunately acoustics is a branch of natural philosophy that has been neglected to an unaccountable degree; and when I refer to the works of authors, it is but to a scanty source, and supplying little information applicable to our subject.'[1] In fact what was to be found in the books of the period referred chiefly to the rate of

[1] *Rational Exposition of the Physical Signs, &c.*, 1828, p. 4. At this period none of those works had appeared, which afterwards threw much light on the nature and properties of sound: those of Chladni, Savart, Wheatstone, Sir J. Herschel, and Arnott. Dr. Thomas Young's lectures were considered the most authoritative: yet I found reason to criticise even his definition of sound: 'It appears that the only condition necessary for the production of a simple sound is a sufficient degree of velocity in the motion or impulse which occasions it.' *Dr. Young's Lectures*, vol. i. p. 378. My remark is:—'It is not simply this, for the velocity of wind, which is much greater than that of most initial soniferous influences, does not suffice to produce sound, unless it meets with an obstacle: and certainly the movements of the earth and heavenly bodies, should, according to this definition, develop sound, and realize the poetic idea of the music of the spheres. A more exact physical definition would be, *motion of a certain velocity, resisted with a certain force.* The moving and the resisting forces, acting alternately in opposite ways, constitute the vibrations of sound.' (*Observations on the Production and Propagation of Sound.* By Charles J. B. Williams, M.D. Read before the Section of Mathematics and General Physics of the British Association, at the meeting at Edinburgh, in September 1834.) To this definition of the essential nature of sound, I have continued to adhere, as representing its true factors, motion and resistance, which must always be present to produce or continue the vibrations of sound in matter, whether solid, liquid, or aëreal. We might call sound, *vibratory motion*, or *undulatory motion*; but these terms do not distinguish it from light and heat, which are likewise, in all probability, modes of vibratory or undulatory motion; but of a totally different nature, subtle and ethereal, and not to be confounded with the more material and mechanical vibrations of sound, which are also to be felt and seen, as well as heard, and represent the coarsest mode of the vibratory movement of matter. The reversal of the modes of vibration, by the conversion of sonorous vibrations into an electro-motor force and current in the telephone, with all the marvellous velocity and subtlety of electricity,—to be reconverted into the identical mechanical vibrations of sound,—marks one of those mighty strides of science by which man is permitted to fulfil the primeval command, to *subdue* (by his intellect) the earth which he occupies.

transmission of sound through air, the production of echoes, and some of the relations of sound to music and to musical instruments. In the few pages which I devoted to a description of the properties of sound, I endeavoured to point out its relation to the molecular elasticity of different kinds of matter, so as to explain their powers of producing, conducting, and intercepting sounds; including not only musical notes, but also the various noises, and material sounds, which, thus studied, may become signs of the physical conditions and motions of the parts in which they occur.

In treating of the motions which constitute sound, I purposely described them as *vibrations*, like those of elastic spheres, or of pendula; and not as undulations, or waves; for although the propagation of sound may in some degree resemble wave-motion, the analogy is imperfect, and tends to mislead. Wave-motion affects surfaces, without pervading the whole material:—sonorous vibration pervades the substance, spreading its motions throughout the mass, by virtue of its molecular elasticity, variations in which render bodies good or bad producers and conductors, of sound. Without entering into further details, I cannot dismiss the subject without the remark that this mode of studying it, through principles, is much more interesting and instructive than learning all the details as dry matters of fact. An example or two of the rational explanation of physical signs may serve in illustration.

Laennec taught dogmatically (without explaining how) that the fine crepitant rhonchus is a sign of the first stage of inflammation of the lung. Pathology teaches that in this stage, the capillaries of the pulmonary artery and vein are engorged with blood, and pressing on the vesicles and finest tubes, which are lined with a viscid secretion: it is obvious that the air in inspiration can force its way through these, only in viscid bubbles, the breaking of which causes, close under the applied ear, a fine crepitation, declaring its seat in the parenchyma itself. The same consideration renders it evident that this crepitation differs in its seat, and in its significance, from any bronchial or catarrhal rhonchi.

Another remarkable and important sign discovered by

Laennec, was the *tintement métallique*, or metallic tinkling. Without attempting to give any explanation of the phenomenon, Laennec described it as a pathognomonic sign of pneumothorax with liquid effusion from perforation of the pleura. But on investigating the acoustic nature of metallic tinkling, I found that it is nothing more than a high-pitched echo, produced by the rapid reflections of sound from side to side within a cavity, as in a bottle, or an india-rubber ball, containing air; and that such a cavity occurs also in an inflated stomach, an excavated lung, or a pneumothorax without perforation. No doubt the most common pathological cause of the occurrence of metallic tinkling is perforation of the pleura from disease in the lung; and this lesion includes factors, which make the sign more evident; such as the bubbling passage of air and liquid through the fistulous opening in coughing; transmission of the voice; the dropping of liquid in the cavity, &c. But the only *essential* cause of the tinkling is the cavity, together with a noise to call forth the echo. Amphoric resonance is the same tinkling reverberation, accompanying breathing, or cough, equally indicative of a cavity. These and other acoustic explanations of physical signs, first published in my little book in 1828, have been generally adopted by subsequent writers up to the present day, hardly ever with any acknowledgment, and not always with evidence that the writer has mastered the subject. It is very surprising, after the great improvements that have been made in education, that medical men, even authors, should sometimes manifest such ignorance of physical science.

I endeavoured to make this little treatise more instructive by tabular views of the physical signs, illustrated by a plate showing the regions of the chest. The subject of the Auscultation of the Heart I treat only summarily, for this reason: 'The signs that are produced by the action of the heart, I have found neither so certain in their indications, nor so intelligible in their causes, as those which I have hitherto described; and I have deemed it proper to postpone any attempt to include them in the plan of this work, until more extensive observation and study shall have supplied the desired intelligence.' Yet in the brief summary which follows, I suggest

probable explanations of the physical causes of the first sound of the heart and of valvular murmurs, which subsequent observations have proved to be correct, as described in the third edition which appeared in 1835.

Mr. (afterwards Sir) David Davies, who was married to my cousin, was at that time in constant attendance on the Duke of Clarence and other members of the Royal Family, and he persuaded me to dedicate my book to Sir H. Halford, with whom he was intimate. That celebrated court physician received me graciously, and seemed pleased with the compliment, although the work was not in his line: but he was still more pleased with my listening to his recitations of his 'Nugæ Canoræ;' Latin verses which he had been lately composing. He complimented me on my style of writing, more than I deserved; for I came to think the language of that juvenile production somewhat pedantic, and too much inflated with Latin quotations. I soon learnt to write more naturally and simply.

The publication of a first work is always a matter of anxiety to a young author. Publishers are not encouraging to the unknown. Happily my father, knowing what my wishes were, undertook to pay the printer: then publishers were ready enough to sell the book 'on the usual terms.' An old firm of medical publishers, recommended by friends, undertook the work, but did not forward it much; for they got into difficulties, and failed a year or two after. In the meantime, without any interest on my part, the book was favourably noticed in the journals, and highly recommended by Dr. Forbes in the new edition of his translation of Laennec. Thus it gradually made its way. In four years another edition was called for, which will be noticed in its place.

CHAPTER IX.

ENGAGEMENT AS TRAVELLING PHYSICIAN IN SWITZERLAND. DEATHS OF RELATIVES. MARRIAGE. 1829–1830.

First Visit to Switzerland—Panoramic View from the Dôle, Summit of Jura—Three Months at Vevay—Excursion to Chamonix by Col de Balme—Return by Tête Noire—Incidents—View of M. Blanc from Dôle (town) on Return. Death of Aunt (Mrs. Williams of Tidenham)—Her Bequests. Marriage Engagement. Illness of two Sisters: Death of One—Reflections on Ovarian Disease and its Mortality lessened by modern Surgery. Sudden death of Cousin, Wife of Sir David Davies—Meeting with her Brother, Archdeacon Williams. Take House in Half Moon Street, Piccadilly. Reflections on Momentous Period of Life. Blessing of Affectionate Friends—The Rev. John Hensman and his Wife at Clifton.

As soon as I had completed this affair of publication, I was engaged as travelling physician to accompany the Earl of Minto and his family on a tour in Switzerland. We were a large party:—Lord and Lady Minto, and ten children, with governess, tutor, and seven servants, and formed a great cavalcade in five carriages, travelling post, by easy stages through the old roads of France. Happily all were in good health; and during the three months my professional skill was not often called in requisition. They had lost a son in a former sojourn in Switzerland, from want of prompt medical aid; and this determined Lord Minto not to travel in future without a physician.

It proved to me a time of most agreeable rest and recreation; and although we passed the greater part of it at the Hôtel des Trois Couronnes at Vevey, the beauty of the surrounding scenery, with my passion for sketching, supplied inexhaustible occupation. It was my first sight of Switzerland; and although I have made more varied tours nearly twenty times since, two or three scenes of that first visit have left a more vivid impression on my mind than anything

that I have subsequently seen. One was the view of the Mont Blanc and the Pennine Alps, from St. Cergues, on the Jura. After many hot and dusty days' journey through the plains of France, and three more through the more agreeable pineclad and rocky ranges of the Jura, the ethereal fairyland of the distant snow-topped mountains bursts on the view, with the lovely azure of Lake Leman, stretched afar, like a hazy mirror beneath our feet. More than fifty years have passed, since I was first enchanted with that scene; yet so lively is my recollection of it, that within the last few months, I have been retouching an old oil painting, copied from my original sketch on the spot. The view of sunrise from the Dôle (5,319 feet above sea-level), the highest point of the Jura, near the same spot, was less beautiful, but more wonderful; exhibiting in front, the whole Pennine range, with Mont Blanc for its summit; and to the left, the more distant peaks of the Bernese Oberland; and the rays of the rising sun gilt up the white mountain-tops successively, according to their height, whilst the lake below, veiled in parts with a mist, reflected here and there gleams of the golden light. The excursion from St. Cergues was on foot; and well I remember the effect of the heavy dews on the high mountain pastures; we were as much wetted, up to the knees, as if we had waded through a river.

Another event worth mentioning, was an excursion to Chamonix. The family had gone thither before me, as I was detained by the illness of one of the children. I therefore made my way alone, taking a horse and guide at Martigny. There I heard that a lady had been taken ill in the châlet on the Col de Balme; so I decided to go thither to offer my aid. On the ascent, clouds gathered, and I reached the top in a mist. There I was told the lady was much better, and would not trouble me. Baulked alike in my humane intentions, and in my hope of a view, I was just turning to jog down in the fog, when there came a sudden break in the clouds, and a magic apparition of the long vista of the Chamonix valley, with its gigantic ranges of lofty aiguilles, stupendous snow-topped mountains, and succession of descending glaciers. The first sight of these wonderful Alpine visions is not easily forgotten; and although often witnessing such scenes since, I have never

been impressed as at that first time. The gleam was but transient, for clouds soon gathered again; and first rain, then snow, closed the night at Chamonix. The next morning was fine; and on looking up, I could hardly believe that the dazzling white dome over our heads, which seemed so near, was the summit of the Mont Blanc itself. Returning by the Tête Noire, I called in the valley of the Trient to inquire for a man whom I had seen the day before and bled for an attack of pleurisy: he was much relieved. This was a *pendant* with the case of the poor lady on the Col de Balme, of whom, on my return to Vevay, I heard that she died a day or two after she refused to see me.

Of course I made plenty of sketches in this excursion: the last was from the descent of the Forclaz, of Martigny and the upper valley of the Rhone, with the windings of the river, contrasted with the engineering straightness of Napoleon's road to the Simplon: this I afterwards painted in oils.

The winter that year set in early. I think it was early in October, that we crossed the Jura, leaving the whole valley of the lake of Geneva covered with snow. One more incident on taking leave of Switzerland is worth recording. We had been four days travelling from Vevay, and as we approached Dôle (town) on an unusually clear autumnal evening, I remarked, 'Now is the time to see the Mont Blanc, if it is ever visible from hence, as it is said to be.' (Lord Minto had travelled often by that route, and expressed his utter disbelief at the possibility of seeing it.) On looking back there it was—plain enough, above the Jura, with its snowy tops reddened with the setting sun, at a distance, I suppose, of nearly 150 miles. The atmosphere was in that peculiarly transparent state, which precedes rain.

During my absence in Switzerland, I heard of the death of my aunt, Mrs. Williams of Tidenham, whose name I have before had occasion to mention. She was a woman of piety, intelligence, and refinement, had travelled much, and was fond of intellectual society. I had often visited her from my childhood; and I accompanied her in a visit to Paris after my return from Madeira. She bequeathed to me her library, including a fine collection of engravings, telescope, micro-

scope, &c.; also plate, linen, and china. These were opportune contributions to an establishment in housekeeping, which I was now contemplating; as I had nearly completed the ten years of study in universities and hospitals and travelling, with which, with my Father's approval, I had desired to prepare myself, before settling down to practice in London.

Soon after my return, I became engaged to my cousin Harriett Williams Jenkins, eldest daughter of Mr. James Jenkins, merchant and landowner, of Chepstow; he was D.L. for Monmouthshire, and had lately been High Sheriff. His wife was my mother's youngest sister: the families were therefore intimate from childhood. My cousin had been well educated, both in secular knowledge and accomplishments, and in religious principles; and as there was much community of feelings and tastes between us, the attachment was natural. One objection only was felt on the part of the parents,—that of relationship: but that eventually gave way to weightier considerations; and it was settled that we should be married in the autumn of that year, 1830.

The serious illness of two of my sisters caused me great anxiety and occupied much of my thoughts at this time. The elder, Sophia, had long been the subject of ovarian disease, and now became much worse, whilst on a visit with me at the house of Mr. Jenkins, at Chepstow; and there she yielded up her gentle spirit to her Saviour, whom she loved and humbly trusted through many years of suffering. The other sister, Catharine, had become a helpless cripple from chronic gouty arthritis, invading and distorting successively almost every joint in the body; near the last even the jaw, which became fixed. Soon after, the heart was affected, and released the sufferer about a year after the death of her sister. These two sad cases give the opportunity of a remark on the improvement which has taken place in the practice of medicine during the last fifty years. The successes of ovariotomy, in the achievement of which the name of my friend, Sir Spencer Wells, stands, *facile princeps*, render it probable that through its means one sister's life might have been prolonged for many years. With regard to the other sister's disease, I can only say that in my later experience, I have never met with one so

intractable; and although examples do occur, obstinate and inveterate, there are few that do not benefit more or less under the multiplied alternatives of alkalies, iodides of potassium or iron, salicine or the salicylates, and cod liver oil, with proper regulation of diet, and occasional aid from baths and warm climate.

In preparation for final settlement in London, it was necessary that I should be much there, or in its neighbourhood, to increase the sphere of my acquaintance, and to be on the look-out for a suitable residence. My relative, Sir David Davies, practising at Hampton, who had been the regular attendant of the Duke of Clarence at Bushey, now succeeded to the responsible office of personal physician of King William IV. and Queen Adelaide; and having much confidence in me, was in the habit of consulting me on various important occasions. And a most grievous affliction, which fell on him about this time, deeply increased his need of sympathy and counsel from all his friends. His excellent wife, my cousin, died suddenly, leaving him with four children, bereaved, as it were, of the light of their eyes, just as they were rising to a state of unexpected prosperity. Her brother, Archdeacon Williams, was summoned, as well as myself, to the house of mourning, and we spent several days together.

I was glad of the opportunity of getting the opinion of so practised a critic, and so profound a scholar, on the composition of my book. He was good-natured, but did not spare me; and I profited by his corrections. He recommended me to take Addison, rather than Johnson, as my model.

After much searching and deliberation, I took a small house in Half Moon Street, Piccadilly, with a pleasant view of the Green Park and Westminster Abbey, and even of the Surrey hills beyond, whenever the smoke and fog of London permitted them to be seen. This street had long been a favourite *perch* for young doctors, and now contained several: the modest dimensions of the houses, and their fashionable neighbourhood, rendering them attractive in a diverse sense.

This was a momentous period of life; and I could not but feel that the visitations with which it pleased God to afflict us in the midst of blessings, were intended to solemnise our minds,

in the hopefulness and buoyancy of youth; and raise our thoughts above earthly things to the 'Love which abideth.' We had the privilege of the intimacy and good counsel of several serious and affectionate friends. Particularly would I mention the Rev. John Hensman, of Clifton, and his excellent wife and daughter, whom my wife and I had known from childhood. His praise was 'in all the churches,' and I never knew a more perfect model of a Christian minister, whose whole life and conversation, as well as his preaching, consistently bore witness to the Truth that is in Jesus. We were indebted to him for introductions to several valued friends in London.

CHAPTER X.

ESTABLISHMENT IN LONDON.

Visit to Aberystwith after Marriage. Arrival in London. Pass Examination of the Royal College of Physicians. Attend Practice at St. George's Hospital. Become Member of Royal Institution, and introduced to Faraday. Engaged to Write for the 'Cyclopædia of Practical Medicine,' by Drs. Forbes, Tweedie, and Conolly—Notice of the Subjects, with Comments and Additions for Present Reading—Bronchitis, Catarrh and Coryza, with Recent Notes on Prompt Modes of Cure—By Stimulants—By the Drying Method—By Opiates—By Inhalation—All with Results of the Author's Experience up to 1883.

After our marriage we spent a few weeks in the country of my forefathers at Aberystwith, with an uncle who was banker there. I had before visited it, and with him made a tour on horseback through Cardiganshire and Carmarthenshire. But as the object of these memoirs is to recall the incidents of my life in connection with professional or scientific subjects, it is unnecessary to dwell on matters of family or personal history.

Although I had the presumption to establish myself as candidate for the practice of a physician in London, it was with the full consciousness that I must wait for years before I could hope for success; and must neglect no opportunity of proving that I deserved it. I soon passed the examination for the Licence of the College of Physicians, and was enrolled among the *Permissi* or *Licentiates*, a term of degradation, which the College never had the right to apply, and which it soon after was obliged to change for the present title of Member. On this subject more hereafter. I became a Governor of St. George's Hospital; and was invited by the Physicians and Surgeons to attend the practice, particularly by Dr. Chambers, and Dr. Macleod; who, knowing something of my reputation as an auscultator, were desirous of my assistance in demonstrations to the pupils. At

first I did not enter as a pupil, because at that time I did not think I had any chance of being elected to the office of physician: but later I was led to think differently, and I did become a perpetual pupil. This gave me a field of observation, which I was constantly requiring for further investigation and experience. I found also abundant opportunities of practice at several dispensaries, the physicians of which were glad of assistance. I became a member of the Royal Institution, of which Michael Faraday was the inspiring genius; and nothing could be more congenial to my mind than his early morning lectures in the laboratory; where, through the introduction of Dr. Charles Holland, one of the managers, I had often the privilege of private conversation with the admirable Director of the laboratory, after the lecture.

Not long after my establishment in London, I was engaged by Drs. Forbes, Tweedie and Conolly, to write articles for their 'Cyclopædia of Practical Medicine.' Those allotted to me were *Bronchitis*, *Catarrh*, *Coryza*, *Expectoration*, *Incubus*, *Irritation* and *Counterirritation*, *Malformations of the Heart*, *Obesity*, *Pneumonia*, and *Stethoscope*; and these appeared successively, a year or two after. Dr. (afterwards Sir John) Forbes was the most energetic of the editors; and it was mainly through his activity and industry, that the work was brought out so promptly and regularly: but he himself undertook to write more than he could accomplish, and had to ask me and others to come to his aid. As may be supposed, articles written fifty years ago must now be considered out of date, and superseded by more modern works; yet I think I can specify a few points in some of those early compositions, which have not received due attention from subsequent writers, and may be profitably recalled even at the present day.

In the pathology of *Bronchitis*, stress is laid on different forms and seat of the inflammation of the mucous membrane; whether *superficial and catarrhal*, with a mere excess and saline quality of the natural mucous or epithelial secretion; —or *deep-seated and phlegmonous*, with first more tumefaction, from interstitial effusion of an albuminous or fibrinous nature; and afterwards external secretion and expectoration of a more animalised matter, more changed from the natural

epithelial or mucous secretion; and in form either fibrinous and pellicular, or corpuscular and purulent. This pathological distinction is truly fundamental, between forms of a disease which is called by the same name, and yet differs so much in nature and severity. The subject was more fully developed in my later publications; especially in Tweedie's 'Library of Medicine' (1840), in which all relating to diseases of the organs of respiration, was written by myself: also it was further considered in my 'Principles of Medicine,' the last edition of which appeared in 1856.

In the article *Catarrh*, I adverted to the division, introduced by Laennec, into *pituitous* and *dry* catarrh, as applicable to congestion and altered secretion, rather than inflammation, of the mucous membrane of the air-passages: and I pointed out their frequent association with diseases affecting the circulation, as those of the heart; or with a morbid state of the blood, from gout, or similar causes of defective excretion: a similar view has been taken by Dr. Copland, Dr. Greenhow, and other experienced practitioners; but it seems to be overlooked by the most recent writers, who systematically ignore the works of their predecessors, without supplying their place by anything better. As proof in point, I will take the next in order of my contributions to the 'Cyclopædia,' *Coryza*.

Under this name, treating the whole subject of fresh cold or catarrh, whether beginning in the head (nasal membrane), or in the throat, and having a tendency to descend to the chest, —the question was discussed, as to the possibility of curing it promptly—of cutting it short, in fact; instead of letting it run its course, which is tedious enough, and often very troublesome, and may become serious, in spite of all help from palliatives and nursing. In my original articles on Bronchitis, Coryza and Catarrh in the 'Cyclopædia' (1832); and more fully in my lectures afterwards ('Lond. Med. Gaz.,' 1838), I advert to the 'heroic' cure by spirituous stimulants, mentioned by Laennec, as a hazardous one; likely to do harm, if it fails to do good:—and to the cure by opiates, practised by Dr. P. M. Latham and others; and made agreeable by Sir H. Halford in the prescription of 'a tablespoonful of poppy syrup in a glass of lemonade;' but likewise objectionable from the after effects

of the opiate on the secretions. Then I recommended—to those who have self-denial enough to adopt it, my method of cure of a cold by *drying it up*; that is, by almost total abstinence from liquids for two or three days. This plan I had found quite successful in my own case, and in that of many friends who had tried it. When I was in Edinburgh I was subject to attacks of severe cold, beginning generally in the head, afterwards attacking the chest, sometimes attended with sore-throat and earache; the cold and harassing cough usually lasting from one to two months, and requiring much active treatment, (including bleeding once), and generally, severe counterirritation with tartar emetic. I think it was after my return from Madeira in 1827, when attacked by one of these severe colds, on noticing that the nasal discomfort and defluxion were worse after tea, I abstained from it; and finding some relief, persevered in abstinence from all fluids for two days, at the end of which, to my surprise and delight, my cold was gone, and did not return again, when cautiously, but most enjoyingly, I resumed the use of liquids. From that time I habitually treated my colds in the same way, with more or less complete success; and for many years, avoided those severe recurrences of cough, which were such, as to lead Dr. Alison to fear that they would end in Consumption. Others, whom I could get to follow my example, were equally successful: but the practice involves too much self-denial to be generally popular. Nor would I recommend it to any, but to those who suffer from colds of some severity. And here I would take the opportunity of adding a few words on my matured experience on this, and some other reputed remedies for a cold, which have been recommended from time to time in the journals; then are forgotten, and do not receive the notice, which they deserve, in the systematic works or dictionaries of the present day.

Long experience has confirmed me in the conclusion, that abstinence from liquids, judiciously practised, is a therapeutic agent of considerable power. It soon diminishes the fulness of the blood-vessels, and the arterial tension, without in a like degree reducing the quantity of the secretions. These go on, in a concentrated form, and with a greater readiness to deposit, than when the drink is continued: more like what

takes place at the decline of fever or inflammation: and this, in truth, is what a day or two of abstinence from drink will often effect. It brings it promptly to its termination.[1] It reduces the fever and catarrhal inflammation, either altogether, or to the mitigated form, in which they exist at the end of a cold, with gelatinous, opaque, unirritating secretion, the discharge of which completes the cure. The plan is most effective when put in practice at the first onset of the cold, when sometimes twenty-four hours' abstinence will suffice. If the cold has existed for two or three days, longer abstinence is required, and the relief, though great, is less complete. Thirst there undoubtedly is, and dryness of throat; and the endurance of this for a day or two is the only penalty you have to pay for a quick and easy cure. Some are so intolerant of thirst that they say 'the remedy is worse than the disease.' I do not urge it on such; but advise them to try some other plan. But to the greater number of the many who catch cold, and to whom the cold and its consequences are annoying, and often much worse, two or three days' abstinence from liquids will be found no penance. The discomfort from thirst is outbalanced by the increased enjoyment, of even the commonest beverages, when the cure is complete. My later experience has proved that the plan may be mitigated by a few indulgences, which do not impair its efficacy. An effervescing saline of citrate of potass may be taken at bed-time. At breakfast and at the afternoon meal, a tablespoonful of milk or cream may be allowed; and any dryness of throat may be relieved at times by a few grapes, or other not too acid fruit. As a matter of course, the diet should be lighter than usual; avoiding the stronger meats, and all rich or highly seasoned articles; but there is no need to abstain from animal food. Of all liquids, alcoholic stimulants are the worst; and they

[1] My friend, the late Sir Thomas Watson, thus pithily explains the *modus operandi* of my plan. 'The principle here concerned is that of cutting off the supply of watery materials to the blood. The wants of the system exhaust from the circulating fluid all that can be spared for the sustentation of the tissues, or for the natural evacuations, and there is nothing left to feed the unnatural secretion from the inflamed mucous membrane. Its capillary vessels cease to be congested; the morbid flux is diverted, and the inflammation starved away.' *Lectures*, 4th ed. vol. 2, p. 21.

should be not only excluded during the cure, but taken only sparingly for some time after. Nothing is more apt to bring back a cured cold, than a premature indulgence in stimulants. One of the great advantages of the dry method of cure is, that it does not require the same amount of confinement, as is necessary under ordinary treatment with warm slops and means intended to promote perspiration and secretion; for if these are checked by chills, the matter is made worse. With warmer clothing, and avoiding draughts and cold feet, exercise in the open air seems rather to promote the efficacy of the dry cure; but it must be moderate, as there is a temporary reduction of muscular power. This plan of treatment commends itself especially to the young and middle-aged, who are active and busy, and cannot afford time to nurse their colds: but for those feeble from age, or disease, it is not equally suitable: its operation is to a certain degree depressing; and although this is quite transient, it may prove more than is expedient for a weakly subject.

Another often effectual remedy for the immediate cure of a cold, is opium or morphia; but to render its operation safe, as well as more lasting, it should be combined with means to counteract the inhibitive influence of the opiate on the excretions. From eight to fifteen drops of Liq. Morphiæ Acetatis, or Bimeconatis, in an effervescing draught of Bicarbonate of Potass and Ammonia with Citric Acid, taken once or twice in evening or night, and repeated if necessary, for two or three days, will in most instances arrest an incipient cold. If the cold has already existed for two or three days, and especially if it affects also the throat and chest, the remedy is less effectual; but it mitigates if it does not cure. Constipation, if it occurs, must be counteracted by an aperient draught in the morning, or a pill at night; and if, as often, there be bilious complication with the cold, a few grains of blue pill should be added to the latter. In the articles Bronchitis, Coryza, and Catarrh in the 'Cyclopædia,' and still more in those in the 'Library of Practical Medicine,' and in my 'Principles of Medicine,' I have pointed out, that although cold is the common exciting cause of these disorders, defective excretion is an important factor in their pathology; acting both as a predis-

posing cause, and as an aggravating element in their course; and means, which correct this defect, are useful in both their prevention and their cure. These therefore should not be neglected, when we resort to opium or other means to arrest directly the Catarrhal process. I claim no originality in the use of this remedy, nor in the particulars to be observed in its application. I believe that many as well as myself are aware of its value. I know that more than twenty years ago, on comparing notes with my dear friend, the late Dr. J. A. Symonds of Clifton, one of the ablest physicians of this country, I found that he was in the habit of curing colds with opium, exactly as I did.

There is also a method of curing a cold by the insufflation into the nostrils, or the inhalation, of various powders, liquids, or vapours, of pungent or stimulant quality. To those unused to snuff, a very large pinch, causing violent sneezing, was formerly recommended as a remedy for an incipient cold; in my experience, it was not successful. Strong solution of Camphor snuffed up the nostrils has more potency: but I am not sure that it would be quite safe, in close proximity to the frontal sinuses. I have long been in the habit of recommending inhalations [1] of the spray or steam of water, impregnated with creasote, carbolic acid, oil of turpentine, or of the Pinus sylvestris, with very good effect in cases of ozæna, and other chronic diseases of the air-passages attended with fœtid, or otherwise depraved, secretions; but not with much success in recent catarrh. Some recent experience, however, has obtained better results, from a modification of this practice, first recommended by Dr. W. Roberts of Manchester, by the aid of the 'Respirator-inhaler.' [2] Dispensing altogether with water spray or vapour, the matter to be inhaled is dropped on cotton wool or tow, in a little metal box adapted to the mouth, or nose and mouth, as a respirator, with elastic loops fastening to the ears. In the last winter (1883) I suffered from a severe cold affecting the eyes and nasal passages with a stinging irritation and acrid discharge, which was only partially relieved

[1] *Pulmonary Consumption, &c.*, by C. J. B. Williams, M.D., F.R.S., and C. T. Williams, M.A., M.D. 1872.

[2] *Brit. Med. Journ.* February 3, 1877.

by the usual treatment with opium and salines. My age and feeling of weakness deterred me from resorting to my old *drying up* plan. Sore-throat and irritating cough followed; and sleep was further disturbed by attacks of difficult breathing, coming on like nightmare, and compelling me to sit up. Some relief was obtained by steam-inhalation and the application of a hot poultice to the throat, prescribed by my friend Dr. Bright, who kindly came to my aid, and found on examination no obstruction in the lungs or air-passages. But what gave me most complete and permanent relief, was the inhalation of the vapour of carbolic acid in a respirator in the manner just described. The acid was Calvert's crystallised, No. 1, with only sufficient water to liquefy it. A few drops of this on the tow of the respirator, renewed from time to time, and the inhalation continued for an hour, and repeated three or four times, had the effect of not only relieving the difficulty of breathing and the cough, but took away the pain and soreness of the throat—in fact seemed to clear up the cold in a marvellous manner; and I afterwards had only to resort to cod-liver oil and tonics to restore strength. There was a strong nervous constituent in that attack; and carbolic acid, besides its antiseptic properties, has a powerful calming influence on the nerves. I have heard of other instances of incipient colds being cured by these inhaling respirators, charged with various mixtures of carbolic acid, creasote, thymol, and other essential oils; and I think they deserve further trials, especially in epidemic catarrh and hay asthma. Further, the recent discovery of the share which the low organisms, called *bacteria* or *bacilli*, have in the causation of tubercle and phthisis, increases our interest in any means by which we may destroy or counteract these parasites; and none seem more promising to this end than agents which may be directly conveyed to their seat and breeding-ground. But it must be a subject of careful study to find out what agents are truly *bacillicide*, without being injurious to the living tissues which they invade. I shall have further opportunities of reverting to this subject, which is becoming one of paramount interest (1883).

CHAPTER XI.

AUTHOR'S ARTICLES IN 'CYCLOPÆDIA OF PRACTICAL MEDICINE' (*continued*), WITH RECENT COMMENTS AND SUGGESTIONS.

Counterirritation explained and declared to be a Rational and Successful Mode of Medication—Reply to Recent Objectors—Recent Modifications. Rigollot's Mustard Leaves. Best Modes of Treating Blisters. Croton Oil. *Dyspnœa*: Analysed—with Suggestions of Remedies for each Kind. *Incubus*: Analysed and Explained—Treatment According to Cause. *Irritation*: Vague Use of Term by Previous Writers—B. Travers, and Broussais—Defined as a Pathological Principle, and Deserving Recognition, although Ignored by the most Recent Writers. *Obesity*: Author's Treatment the same with that recommended ever since, but assisted by Division of Cases into Sthenic and Asthenic. *Pneumonia*, Postponed.

THE article in the 'Cyclopædia' on *Counterirritation* is chiefly practical, for although allusion is made to the fact that nature sometimes suggests the use of this therapeutic agent, in the cure of internal disorders, by the spontaneous appearance of an eruption on the skin; and the *modus operandi* of counterirritants is briefly discussed, attention is principally directed to forms and modes of Counterirritation; and to the manner in which these may be made most effectual in the treatment of disease. Much of the utility of counterirritation, as a remedial agent, depends on the judgment and care with which it is practised; and now after the additional experience of upwards of forty years, I have no hesitation in declaring that counterirritation, judiciously employed, ranks among the most beneficial means which we possess in the treatment of disease. There has been a fashion of late to decry this mode of practice as *barbarous and irrational*: but the adduced objectors have neither sound pathological knowledge, nor clinical experience, sufficient to set aside the general verdict of the profession in its favour. When we know, from direct physiological experiment, that we can so act on the tonicity of the

arteries of one part, as to increase the flow of blood through them, and thus to diminish the flow to other neighbouring parts, we gain some insight into the principle of *derivation*, the first factor in the process of counterirritation. And when further physiological observation teaches us that, by a continuance of the same interference, we can convert the artificial determination of blood into inflammation, with its changes,—vascular infarctus, and corpuscular formation and effusion,—we gain a further glimpse of the process by which counterirritation *countervails* a previously existing inflammation. If my space admitted I could add much more to prove that the practice of counterirritation is not *irrational*. Neither is it *barbarous*, if carefully carried out. The instructions for the proper choice, and use of counterirritants, given in that article in the 'Cyclopædia' written fifty years ago, include particulars not to be found in recent works: and I will add a few practical suggestions arising out of my further experience.

Among rubefacient counterirritants, a useful and convenient kind has been introduced in the form of the 'mustard leaves' of Rigollot: but when used alone, they are too strong: they cause so much pain, that few can bear them on long enough to obtain permanent good. But they may be rendered tolerable and far more effectual, by interposing two or three folds of wet linen between the mustard surface and the skin; as by wrapping the leaf in a linen handkerchief, or napkin, wetted with hot water. By this dilution, its burning effect is so much mitigated that it may be kept applied without discomfort for hours—even all night: yet in the morning the vivid redness proves how effectual it has been. In fact its effect thus becomes more permanent and beneficial, as well as less painful. The erythema may continue till the next night; and if so, a wet compress will suffice, instead of another leaf.

In the 'Cyclopædia' I recommended that blisters should not be kept on for more than six hours, (instead of the twelve or twenty-four, which was the usual custom), but that the efficacy of the blister was to be ensured by moistening its surface with oil (which renders the cantharidine more active); interposing, if needed, a thin gauze. If at the end of six hours the blister have not risen, a linseed meal poultice is to

be applied, under which the vesication pretty surely takes place. If the blister has risen, the vesications are to be snipped, and then the poultice applied. I recite these directions here to confirm them, as very effectual in securing the safe operation of blisters, in diminishing the irritation which they cause, and in increasing their beneficial effects. This treatment with a large blister, is especially suitable for acute pleurisy, (the poultices being renewed twice daily); in conjunction with calomel and opium, digitalis, and salines. In slighter pectoral inflammations, and those intercurrent in phthisis, the stronger form of Acetum Cantharidis, with Camphor Spirit, acts more mildly than a blister, and causes less pain than the ethereal solution.

For the tartar emetic ointment and solution, which I used many years with great success, as a pustulating counterirritant, I more recently substituted croton oil, as more prompt in action, and less troublesome to manage in its after effects. One part of croton oil with two of cerate, rubbed on the chest, often without repetition, excites an eruption in a few hours; which has proved very effectual in curing severe bronchitic coughs, which had resisted milder remedies. The eruption requires only to be anointed with vaseline, and covered with a silk handkerchief or cotton wool, and gets well in a few days: but the hands should be washed after using the ointment, and care taken that its fumes do not affect the face.

Under the head *Dyspnœa*, difficult or distressed breathing, the symptom is analysed and described in its several degrees and phenomena; and then traced to its cause in one of the three factors in the function of respiration—1. the blood; 2. the respiratory machine; and 3. the air. 1. As the condition of the blood, which is called venous, is the immediate cause of the sensation of dyspnœa, so the blood being (so to speak) *more venous* than usual may give rise to the feeling of dyspnœa, without any fault of the respiratory machine. Of this nature is the dyspnœa from violent exercise, hurried or laboured breathing, which ceases as the excess of venous blood becomes reduced by rest. In a similar way diseases of the heart cause dyspnœa by the accumulation of venous blood in the lungs: and in some other states an increased *besoin de*

réspirer (Laennec), amounting to dyspnœa, seems to be caused by changes in the blood, from morbid poisons affecting it. 2. Changes in the respiratory machine may cause dyspnœa—*a.* by interference with the motory power; *b.* by obstructing the passage of air to and from the pulmonary cells; *c.* by derangements in the pulmonary tissue, obstructing the action of air on the blood. 3. Insufficiency, or impurity, of the air breathed; which means chiefly, deficiency of oxygen. These heads are pursued into their details, which need not be quoted.

I take this opportunity of adverting, apropos to the treatment of dyspnœa, to the possibility of aiding the oxygenation of the blood, by the administration through the stomach, of peroxyde of hydrogen recommended by Dr. Richardson and others, and of combinations of chlorate of potass and nitric acid, or other matters abounding in oxygen in a loose state of combination. I have sometimes fancied some beneficial effects to have resulted from the use of these agents in cases of emphysema and habitual dyspnœa, but I cannot recall the facts which gave me confidence. Inhaling the vapour of oil of turpentine, (alias '*Sanitas*'), is said by some chemists to be a means of promoting the formation of peroxyde of hydrogen, but I am not acquainted with any experimental proof thereof. I do think it probable that some of the good effects of the hypophosphites, in phthisis, and other diseases of the lungs, is due to their supplying the blood with something *hungry* for oxygen, and apt to absorb it from the scanty supplies of feeble aëration. The inhalation of air with an increased proportion of oxygen, and of condensed air in a compressed air bath, are other means of attaining the same object, which deserve further trial.

The article '*Expectoration*,' which I contributed to the 'Cyclopædia,' hardly deserves mention; as in many respects it has been superseded by the more exact information of subsequent publications, by others, as well as by myself. Some remarks on the process of Expectoration, however, were original, and hold good to the present time.

The subject of '*Incubus*,' or '*Nightmare*,' was discussed with more care than has been bestowed on it by recent works, in

which it is dismissed in a few words, as a mere form of indigestion disturbing sleep, or a symptom of the disorder of an overworked brain.[1] A few extracts will suffice to show my view of the subject, concerning which personal experience has supplied some additional information.

'The usual and severe form is that, in which the patient, in the midst of his sleep, becomes conscious of a huge weight on his breast, which oppresses and impedes his breathing. This is accompanied by a feeling of inability to move, or to speak, which greatly increases the discomfort: and the fancy, ever active, embodies these feelings into an imaginary monster, overpowering and oppressing the body. Hence the superstitious names *nightmare*, *incubus*, &c. In many instances, the sense of weight or pressure is less defined; but there is general uneasiness, which the dreaming mind shapes into an impending danger, such as falling down a precipice, being pursued by an armed enemy, or savage beast, and the like; with a feeling of weight on the limbs, and inability to escape; and this becoming so intense as at last to break the remaining tie of sleep, the person awakes in a fright, often with hard breathing and palpitation of the heart. Nightmare, in all its varieties, is a disorder of the function of sleep. The power of volition, both in mind and body, is more or less completely suspended during natural sleep. Other mental functions may be equally so: but more generally trains of thought, dreams, go on; and simple sensation, although blunted, is not entirely suspended. Dr. Alison has well established the opinion, long ago entertained by Whytt, that respiration is an instinctive motion, excited by the sensation of black blood in the lungs; and the movements and changes of posture, unconsciously made during sleep, seem to be of the same kind,—instinctive movements, and can hardly be called acts of volition. But if, from any cause, respiration is imperfect, the instinctive or involuntary motions are insufficient, and voluntary effort is required to supplement it. The breathing during sleep may be rendered imperfect by a constrained posture—with some persons even a supine posture—by too hollow, or too soft, a bed—by distension of stomach—palpitation, or faint action of the heart—by a slight attack of asthma, or any other form of dyspnœa. During our waking hours, such impediments to the breathing are obviated by the supplementary aid which voluntary efforts can give to the respiratory process: we change our posture, draw deeper breath, relieve the stomach by

[1] See Quain's *Dictionary of Medicine*.

eructation, or the air-passages by cough and expectoration, &c., and this, with hardly a consciousness of the ailment, or of the act which relieves it. But during sleep these voluntary movements are not at our command; the respiratory act is more limited; and although sufficient for the ordinary rate of the function, becomes inadequate, when an embarrassment renders necessary increased exertion, or new movement. In the event of this, therefore, black blood gradually accumulates in the lungs, with its consequent effects of congestion in the right cavities of the heart, and a feeling of oppression and suffocation; which after tormenting the mind for a time in some demoniacal form, at length reaches such an acme, as to break the spell of sleep, and awake the sufferer to the possession of those voluntary powers, by the exercise of which, in hard breathing, the bodily function is relieved of its embarrassment. No sooner is he fully awake, than the bodily uneasiness is removed, and he is sensible only of the mental disquietude which his frightful dream has occasioned: but this, together with the excitement of the restored circulation, may prevent him from readily composing himself to sleep again. This we conceive to be a sufficient explanation of the phenomena of nightmare; without resorting to hypothetical notions of pressure on the solar plexus or nerves of the stomach, which if capable of producing an effect at all, should do so equally beyond the period of sleep. Incubus may be contrasted with somnambulism, in which the power of voluntary motion continues, whilst the external senses are either suspended, or their impressions are superseded by some train of ideas that engrosses the mind. Other causes of disturbed sleep are pains of any kind; as toothache, earache, cold feet, &c., which when insufficient to prevent sleep, become the demon of a dream, tormenting the sufferer in all sorts of distressing forms. There is, however, between these causes and those which produce nightmare, this difference;—with these, the person awakes to a consciousness of the real cause, whereas the sensation of nightmare ceases with the return of voluntary movement.'

If we are correct in associating nightmare with imperfect breathing during sleep, it is obvious that the proper treatment will be by means directed to remove the cause of the imperfect breathing, whatever it may be; and not by means calculated to increase the soundness of the sleep. This consideration excludes generally hypnotics or narcotics; except in those cases in which these may also relieve the breathing as in

spasmodic asthma. Here choral hydrate is sometimes beneficial: but in other cases bromide of ammonium, with ether, and other diffusible stimulants, are the most useful additions to the various means to be addressed to the cause of the disorder (1883).

The article '*Malformations of the Heart*' was chiefly compiled, with a few original suggestions on the mode in which the most frequent forms of malformation, open ductus arteriosus, and foramen ovale, may take their origin from the imperfect performance of respiration at and after birth.

'*Irritation*,' (1833) was a more elaborate production, called for rather by the wide and frequent use of the term by previous writers, than by any claim, which it had for a place in nosological classification. After denouncing the vague and totally unscientific use of the word, as generally applied, I proceed, to examine critically the views on *irritation* put forward by two of the most distinguished writers of the time, M. Broussais, and Mr. Benjamin Travers; and conclude with an attempt to define and exemplify, so far as the existing knowledge of physiology and pathology permitted, the general nature of *morbid irritation*. The kinds of irritation are considered under three heads: 1. Those caused by *direct irritants or stimuli*, whether acting immediately on the part, or mediately through the nerves. 2. Those caused by a *preternatural irritability*, which, independent of any new existing influence, renders the relation of ordinary circumstances a source of irritation: and 3. Those caused by *indirect irritants*, or those influences, which although in themselves, prostrating or sedative, become irritant through the reaction of the vital powers against them. The discussion of these several heads opens up a pretty extensive chapter of general pathology; and is followed by an equally copious description of the *treatment of irritation*, which brings in review the chief therapeutic agents, by which this manifold form of disorder, is to be controlled or counteracted. The article is too long for republication, and will not admit of abridgment. It met with the especial approval of Dr. Conolly, the most philosophical of the editors; and I considered it to be the most original and successful of my contributions to the 'Cyclopædia.' In

Quain's 'Dictionary of Medicine' there is not a word on the subject: but only a short able article on *Spinal Irritation*, by Dr. Brown-Séquard.

The article '*Obesity*,' in the 'Cyclopædia' (1833) was compiled without much personal experience on the subject: but the pathological views and the plan of treatment were grounded on the most recent knowledge of animal chemistry; and anticipated in several points the notions and directions of subsequent authors. Abstinence from all excess in food, both solid and liquid, especially those containing fat, sugar, or starch, is enjoined on all fat subjects; but the degree to which this is to be carried, how far active exercise is to be enjoined, and how medicinal treatment is to be directed, is suggested by an important practical division of cases of obesity, into two classes, —*sthenic*, and *asthenic*.

'*Pneumonia*' in the 'Cyclopædia,' (1833) was the largest of my contributions, occupying nearly fifty pages. This is too extensive a subject to admit of analysis here: but it may come under consideration in a future volume, (if I am spared to produce it;) when I may have occasion to review the results of my experience in this and other important diseases.

CHAPTER XII.

PROFESSIONAL PROGRESS. RECREATIONS IN ART AND SCIENCE.

Painting in Water Colours and Oils—Landscapes—Portrait of Author's Father in Oils. Researches on Low Combustion—First Discovery in 1823—Pursued after Conversations with Faraday—Proved to be Combustion, not Phosphorescence, and to affect most Combustible matters—Thus proved to be a Law or General Fact—Examples in Phosphorus, Sulphur, Arsenic, Potassium, and other Metals, Oils, Wax, Wood, Paper, &c.—Occurring also with Gases and Vapours; as with Spongy Platinum—Nature of Light of Low Combustion—Products of Low Combustion—Explains Spontaneous Combustion of Hay, Oiled Wool, &c., and Renders less Improbable Spontaneous Human Combustion—Throws Light on Animal Heat, &c.—Paper on the Subject Read to Royal Society, but not Published—Experiments Exhibited at the Royal Institution, and at the Meeting of British Association at Edinburgh in 1834—Visits to that Meeting, and to the Preceding One at Cambridge—Account of those Meetings and Voyages to and fro.

Although I found no want of occupation during the first years of waiting for practice, the practice itself came but slowly. In the first year, through the kindness of friends, I had more than I expected, getting on an average two or three fees a week: but in the second year there was a falling off; and the receipts hardly reached 100*l.* at the year's end. But there was ground for encouragement, in that more came from strangers, and that I had evidence that my name was becoming known in the profession in a way that was promising for the future. There was no lack of opportunities of experience among the poor in hospitals and dispensaries; and I had the charge of one connected with District Visiting Societies in the parish of Marylebone. I was also appointed consulting physician to the North-West London Self-Supporting Dispensary, the first of the kind in London, on the plan pursued by Messrs. Bicknell and Nankivell at Southam. I took part in its establishment: its first officers were Mr. W.

J. Byam and Mr. A. B. Chisholm ; who carried it on successfully many years. Although these, together with the Medical Writings before mentioned, occupied much time, there was still enough left for domestic and social relations, and for a little recreation in art and science.

My favourite pursuit of drawing was not neglected ; and, in conjunction with the congenial tastes of my wife, we generally had some work in water colours or oils going on, to vary the employments of London life. My usual subjects were landscapes, for which I had numerous studies in the sketches taken in my travels : but I had made one attempt at a portrait, that of my dear Father. We were all desirous to have his portrait taken ; but he was averse, at his advanced age, to go to London for the purpose ; and before I left the country, I had the audacity to try to paint him in oils. The result was, as might be expected, an indifferent painting, but it was a very striking likeness, which was quite satisfactory to the family. I bestowed more care and time on it than on any painting that I ever accomplished, and heavily taxed my poor sire's patience in thirty or forty sittings. The great difficulty was with the mouth ; which in my opinion, is always the most characteristic feature in the face ; requiring the most truthful accuracy in every line and shade, especially at the commissure of the lips, to give the full likeness and expression. A lithograph was afterwards taken from the picture, but I could not get the artist to bestow care enough on the mouth to preserve the identity of the original.

The lectures at the Royal Institution were a source of never-failing interest and gratification ; especially those in the laboratory by Michael Faraday himself ; then Director of the laboratory, and pursuing his researches in electricity and magnetism ; the results of which were made known from time to time on the Friday Evening Meetings. After one of the laboratory lectures, I mentioned to him some observations which I had made on *the low combustion of a candle, visible in the dark,* which I had communicated to the ' Annals of Philosophy ' of July 1823 ; which was my earliest publication. The chief facts were, that wax, tallow, oil, resin, and many other compound inflammables are luminous in the dark when

heated to a point much below redness. Faraday's reply was, 'This is very interesting; and you must work it out, to ascertain whether this light is from combustion, or phosphorescence,' like that of fluorspar when heated. This I did by the following experiments.

A metallic ladle, containing the wax or oil, is heated over a spirit lamp till it begins to smoke. It is then luminous in the dark; and if plunged into a vessel containing oxygen gas, the faint light brightens, and instantly after bursts into a vivid flame of full combustion. If instead of oxygen, it is put into carbonic acid gas, the light is extinguished: but, if again raised into the air, before it has time to cool, the light reappears. Wax or tallow was heated in close tubes in the dark: they gave out no light: but on being opened, the light appeared. These and other similar experiments sufficed to prove that the light was due to low combustion, and not to phosphorescence.

On further trial I found that other animal and vegetable matters, paper, cotton, linen, wood, straw, gum, cornflour, wool, silk, leather, horn, bone, ivory, &c., also exhibited the light of low combustion in the dark, on being heated to what may be called the lowest charring point;—that is, when they begin to change colour, and to smoke; which is far below the lowest red heat of incandescence.[1] An easy mode of doing this, is to heat a mass of iron (a laundry flat iron for instance) to low redness: take it to a dark room, and wait till after it has lost all trace of incandescence; or power of raising a spark: then lay on it the object to be tried. If it is wax or tallow, it melts and spreads; and first the margin,—soon the whole surface—exhibits a soft and wavering light, which accompanies the giving off of smoke from the burning matter. If the object is solid, as paper, wood, or wool, the light is more still, and continues till the iron cools, or the more combustible matter is consumed. The charred residue does not show the combustion; neither does charcoal.

[1] Any one can make this experiment. Heat the end of a common fire-poker to redness: pass a sheet of paper around the cool part, holding it tight by its free edges; then take it to a dark room, and gradually draw the paper towards the hot end: before it reaches this, the paper will show the pale light of low combustion.

This low combustion is not limited to vegetable and animal combustibles. It occurs with the more oxidisable metals, zinc, antimony, lead, and some others.

When fine fresh filings of these are thrown on the hot iron in the dark, they also show the pale light of low combustion.

The low combustion of sulphur and of arsenic is already well known: but it differs from the examples, which I have been adducing, in its occurring at a lower temperature: that, in fact, at which these bodies are volatilised; and consequently their low combustion is in the form of a lambent flame on the surface of the vapour, as it rises from the heated matter. Sulphur melts before it sublimes. Arsenic passes from the solid state into that of vapour. But both, in contact with air, burn in this low combustion at the temperature which sublimes them.

The most familiar example of low combustion is that of phosphorus, which goes on at ordinary temperatures. It is commonly supposed that the spontaneous combustion of phosphorus is aided by the nitrogen in the air; because its light is diminished in oxygen gas. But this is what I have observed:—On first introducing, in the dark, a bit of phosphorus into a vessel containing oxygen gas, its light is generally lessened; but in a few points, brightens up, and in a few seconds these points move in bright coruscations, and soon burst out in open vivid combustion. A like spontaneous open combustion will take place in common air, if the phosphorus is placed, not on metal or glass, but on cotton wool, woollen cloth, or any other non-conducting substance, which permits the heat of its low combustion to accumulate, and so to bring it up to the point of full combustion.

Another highly combustible matter likely to exhibit low combustion, like phosphorus, at ordinary temperatures, is potassium, and this I ascertained to be the case. When a bit of potassium is taken out of the mineral oil in which it is kept, and, after being wiped, is cut with a knife, its bright metallic surface quickly becomes tarnished by oxidation; this is accompanied by the light of low combustion, visible in the dark.

It appears, then, to be a general fact, with some exceptions, *that combustible matters, whether simple or compound, are capable of low combustion*,—that is, of combining with oxygen, with evolution of light and heat, at temperatures considerably below those of ordinary combustion. The exceptional matters, which I have not found to exhibit the light of low combustion, are charcoal and coal, alcohol and ethers, volatile oils, camphor, and sugar. With regard to the greater number of these, it is probable that their volatility reduces their temperature too quickly for the combustion to take place under ordinary circumstances: but with regard to alcohol and the ethers, we seem to have evidence of the low combustion of their vapours in contact with spongy platinum; and this helps to explain one step in the process of this curious phenomenon. If, on further inquiry, charcoal be still found among the exceptions, it may be classed with iron, and other metals, which have only a high burning point.

If the general fact of low combustion be admitted, two further questions arise with regard to it, which call for further investigation: 1, the relation of the light of this combustion to that of ordinary ignition or incandescence, and its position in the spectrum: and 2, the nature of the products of this low combustion.

1. If, as Sir H. Davy surmised, the light of flame is produced by the incandescence of particles of the burning matter or of its product, the lowest grade of flame ought to exhibit the lowest degree of incandescence. But this is commonly described to be red; cherry red being the lowest visible heat: yet very little red appears in subdued flames of ordinary combustion; and still less, if any, in the light of low combustion, which is generally pale and colourless, in some cases with a tinge of blue or yellow. It hardly seems possible to explain the colours of ordinary flames by a reference to degrees of incandescence of the particles of the burning matter; and still less does the pale light of low combustion seem to belong to the same class of phenomena as the red heat of common combustion. Is it certain that the lowest visible incandescence is red? Fifty years ago, when my sight was young and vigorous, and much practised in observations in the dark, connected

with this subject, I almost came to the conclusion, that there is a pale colourless light below red heat,—that is, *a white heat below red heat.* On attentively watching, in perfect darkness, a heated mass of iron, such as a laundry iron or cannon ball, as it cools from red heat, its form remains visible from ten to twenty seconds (according to size), after all red colour has vanished, in a faint pale white, or yellowish white, which gradually disappears as the iron cools.[1] If there is doubt as to the correctness of the observation (and I confess that I have less confidence in it than when my sight was younger) it is connected with the difficulty of distinguishing colours in objects which are only just within the range of visibility: there is therefore need of concurrence of many observers on such a point. I would add that this is not an essential part of my principal subject, low combustion; but if substantiated, it would assist in explaining some of its phenomena.

2. The nature of the products of this low combustion points to a wide field of investigation, on which I cannot attempt even to enter. I do not know that the products of the low combustion of phosphorus, sulphur, arsenic, and other elementary matters have been experimentally determined with precision: and those of compound combustibles, oil, wax, wood, paper, wool, and other vegetable and animal matters, are little known. For the most part they are not like those of complete combustion,—water, carbonic acid, and ammonia; but sundry proximate elements, among which may be mentioned acetic and pyroligneous acids, and other matters, called empyreumatic. They may somewhat resemble the products of destructive distillation, but they are not identical; as in the latter process the air is too much excluded for low combustion to take place.

Exclusive of the interest arising out of the establishment of a *law, or general fact of low combustion,* the subject is of practical importance, as bearing on that of *spontaneous com-*

[1] This is no ocular illusion from fatigue of the retina, like the patch in the vision after looking at a bright light or vivid colours: such patch could only be dark after a white light, or of the complementary colours, if coloured. If any patch appeared after watching the red-hot iron, it would be green, the colour complementary to red. But there is not glare enough in a dull red iron to thus disturb the vision.

bustion of hayricks, of oiled rag-heaps in factories, of coal-stores on board ship, and of the human body. The self-ignition of newly made hay, insufficiently dried, probably has its origin in the vinous fermentation of the sugar of the new hay, causing heat in the centre of the rick, which accumulating, gradually rises to the point of low combustion; which under favourable circumstances may increase till it reaches the charring point, and then burst into an open flame. The spontaneous combustion of oily tow, or rags, occurs where such matters have accumulated in large heaps: the oil in the interstices absorbing oxygen at ordinary temperatures sufficient to generate heat in the mass, first to low combustion, and eventually to open ignition. The spontaneous ignition of coals occurring on board ship, is probably connected with the presence of pyrites in the coal; but, no doubt, the proneness of their sulphur to low combustion, is a chief factor in the process.[1]

Mr. Faraday became so much interested in this inquiry, that he suggested to me to give an experimental demonstration of the subject at one of the evening meetings of the Royal Institution. This I did in the spring of 1834; not without trepidation, for it was my first attempt at a public lecture. I had often spoken at Society meetings; but it was a much more formidable affair to address such an audience, and conduct a number of experiments requiring nerve and steadiness. However, with the kind aid of Faraday and his assistant, Anderson, I got through it, well enough to satisfy my audience of the reality of the facts and phenomena of Low Combustion.

By the advice of my friend Dr. Maton I prepared a paper on the same subject for the Royal Society; and I was much gratified by the manner in which it was spoken of by Mr. Children, the secretary. Nevertheless it was not considered sufficiently profound for a place in the 'Philosophical Transac-

[1] Note, 1883. The facts with regard to *spontaneous human combustion* have been neither sufficiently authenticated, or examined, to entitle them to serious discussion: but their improbability is diminished by the discovery of the law of the combustibility of animal matters at low temperatures; especially when taken in connection with their occasional liability to fatty degeneration; and bearing in mind the general recognition of the existence of a process of *eremacausis*, or slow combustion always going on in the animal body.

tions ;' and was but briefly noticed in the 'Proceedings,' which were very imperfectly recorded at that time. This was a disappointment to me; and a matter of surprise to my scientific friends, who thought that the facts which I had discovered, sufficient to establish a new law in combustion—a process of everyday and everywhere importance—were at least as deserving of a place in the 'Philosophical Transactions,' as the discovery of a remote telescopic comet, or of a rare and obscure new metal, the claim of which would be considered irresistible.

But the British Association for the Advancement of Science had then just come into existence, and afforded to workers in science the much needed opportunity of making known the results of their labours. I had already attended its third meeting, which took place in Cambridge in 1833; and witnessed with delight the enthusiasm of Professors Sedgwick, Buckland, Whewell, and Phillips, in inspiring and carrying on the proceedings. In the section of Medicine I joined in the discussion of a paper on the 'Sounds of the Heart,' by Mr. Carlile; and there first publicly stated my opinions of their causes, which subsequent experiments proved to be correct. At the meeting in the following year, 1834, at Edinburgh, I read my paper on 'Low Combustion,' and exhibited the experiments in the Chemical section before Dr. Dalton, Professors Thomas Thomson, Johnston, Thomas Clark, Thomas Graham, and others, who all appeared satisfied with the results. The venerable Dalton, and Thomson of Glasgow, whose works I had studied from my youth, expressed much interest in them. The Committee of Recommendations subsequently recommended 'that Professor Graham and Dr. Williams be requested to investigate further the phenomena of Low Combustion.'[1]

This recommendation was never carried into effect. Professor Graham was living in Glasgow; and I had no opportunity of meeting him, until a few years after, when he was appointed professor of Chemistry in University College, London. He then called on me, proposing to take up the subject. But it so happened, that at this time I had succeeded

[1] *Fourth Report of the British Association, &c.*, in Edinburgh, 1834, p. 588.

to the Professorship of Medicine at the same College at a very short notice; and I was utterly unable to undertake any additional work. And afterwards, although colleagues, we were each so much engrossed in his own particular department, that no opportunity occurred of our working out this interesting problem. This I much regret; for it cannot be doubted that the profound knowledge and skill of this greatest of modern British chemists would have achieved very important results from the investigation. I was long intimate with him: for a time attended him professionally; and always was deeply interested in the early communications which he made to me of some of his profound researches in physico-chemical science.

So 'Low Combustion' has been shelved until the present time; and no chemist that I meet with seems to know anything about it. Professor Graham always noticed my experiments in his lectures: but the only published report of them is in the brief notice in the fourth volume of the 'British Association Reports,' before alluded to: no one else seems to have written on the subject.

At the same meeting at Edinburgh, I read a paper in the Mathematical and Physical section 'On the Physical Explanation of the Production and Propagation of Sound.' This was published in the 'London and Edinburgh Philosophical Magazine' for January 1835; and has been already referred to at p. 65. I had also contemplated the performance of certain physiological experiments to determine the physical causes of the sounds of the heart, in compliance with an invitation for that object which I had received from Dr. Macintosh. But he was absent from Edinburgh; and Dr. Sharpey and Mr. Dick, to whom I was introduced for the same purpose, did not succeed in getting subjects for the experiments.

The meeting was altogether a most interesting one. The lecture of Sir Charles Bell on his 'Discoveries in the Nervous System' was a great attraction; but was not so successful as was expected. My friend, Dr. Brabant, who accompanied me, applied to it the term *magniloquent*, in comparison with *magnificent*, the fitting epithet which he used with regard to the

demonstration of Mr. James Syme, which followed—on the Successful Excision of Joints. The journeys to and from Edinburgh by steamship were particularly agreeable; with Dr. Neil Arnott, Charles Wheatstone, Dionysius Lardner, Chaplain-General Gleig, and other eminent men among our fellow-passengers. I was glad also to renew my acquaintance with Professors Alison and Christison after ten years' absence from my Alma Mater.[1]

[1] I also saw Dr. Hope, the great Chemical Lecturer; but he had become infirm and blear-eyed, and did not recollect me. I have a misgiving that I used too harsh an expression with regard to him, at p. 19, in saying that 'he declined to enter into the subject' of my thesis: it was rather, that he evidently wished to dismiss it with a few polite words.

CHAPTER XIII.

SECOND EDITION OF WORK ON 'DISEASES OF THE CHEST.' CRITICISMS OF THE WORKS OF DR. HOPE AND OTHERS ON MOTIONS AND SOUNDS OF THE HEART.

Performance of experiments to settle doubtful points, proposed to Dr. Hope; but on his failure, undertaken by Author and carried out by him and at his expense, with the assistance of Dr. Hope and others—Letters in Evidence—Success of experiments—Conclusions—Dr. Hope's claim to the experiments—Referred to Sir B. Brodie—His Letter of Arbitration—Dr. Hope's continued misunderstanding deplored. Publication of Third Edition with the experiments—Translated into German, &c.

For a year or two after the publication of the 'Rational Exposition of Physical Signs,' &c., in 1828, its sale was impeded by the bankruptcy of the publishers. Mr. Churchill then took it in hand, sold off the remaining copies, and called for a second edition in 1833. The chief additions in this, related to the sounds of the heart in health and in disease. In the first edition I expressed my doubts respecting Laennec's opinions on these subjects; and especially, his ascribing cardiac and arterial murmurs to a fancied spasm of arterial muscles. In 1829, Professor Turner of Edinburgh proved by experiment, as well as by reference to observations of Harvey and Haller, that the auricles of the heart contract before the ventricles, and cannot therefore be the cause of the second sound, as supposed by Laennec. In allusion to this, Dr. Forbes[1] concludes thus:—'I recommend this subject to the especial notice of Dr. Williams.' But at this time I found that Dr. Hope, with whom I had long been intimate, was devoting his attention to diseases of the heart: and not to interfere with him, I did not take up the subject, except in clinical study. But at

[1] *Translation of Laennec*, 3rd ed. 1829, p. 559.

his request, I assisted at some of his experiments on August 10, 1831. In these, and in others, at which I was not present on July 31, 1830, the points determined, were the succession of the motions of the auricles and ventricles, and their relations to the sounds and impulse, but had no reference to the physical causes of the sounds. Dr. Hope and I were then on most friendly terms. He requested me to revise his work before going to press; and I had it in his handwriting that he adopted all my corrections, and a classification of his subjects which I had suggested. His work was printed in November 1831, and by his express desire, I wrote a review of it, which appeared in the 'London Medical and Physical Journal' for December 1831, and January 1832. In this review, although speaking favourably of the work, I pointed out certain defective points in the experiments and views with regard to the sounds of the heart. 'We do not think that Dr. Hope has completely established these points as far as relates to the physical causes of the sounds.' Then follows a discussion as to the cause of the first sound: and in conclusion:—'This matter is therefore still open to discussion,' p. 518.

To carry on the narrative from this point, I will quote from a little pamphlet, afterwards published,[1] the following extracts.

'Nearly two years elapsed without anything further being attempted by Dr. Hope in the way of experimental investigation, although extended observation had further convinced me that it was needed. In September 1833, I appended to a second edition of the "Rational Exposition" a summary of the chief views which had been broached on the subject of the motions and sounds of the heart, with a discussion as to their several merits and defects, and suggestions for bringing them to the test of further experiment. To show how this appendix paved the way for the experiments, I will quote a few passages.'

'I have added an appendix in which are discussed various unsettled points connected with the auscultation of the heart, more with a view to guide future inquiries, than to settle the matter by argument.' Preface to second edition of the *Rational Exposition* &c. September, 1833.

[1] *A Brief Account of Facts with regard to certain Researches on the Heart, in Reply to Statements in a Memoir of Dr. Hope.* By C. J. B. Williams, M.D., F.R.S. Churchill, 1842.

'Although it seems fairly established that the first or dull sound is produced by the systole of the ventricles, and the second or quick one by their diastole, it is by no means clearly explained in what way these actions generate these sounds. The following causes have been severally assigned as physically capable of generating the first sound during the systole of the ventricles.

'1. The collision of the particles of fluid in the ventricles.—(Dr. Hope.)

'2. The rush of blood into the great arteries.—(Mr. Carlile.)

'3. The closing of the mitral and tricuspid valves.—(M. Rouanet, Dr. Billing.)

'4. The muscular contraction itself.

1. The first of these explanations is ingeniously proposed by Dr. Hope; but he advances no facts in direct proof of the hypothesis. In a number of experiments which I have made on the generation of sound, I have found liquids, of all bodies, the most difficult to excite to sonorous vibration. Although they readily transmit vibrations already produced in solids, it requires a combination of circumstances to make them produce sound (as with the syren). In making an experiment with a gum-elastic bottle, by filling it with water, and then forcibly compressing it by the end of the stethoscope (avoiding the use of the hand, for that produces its own muscular sound), I have failed in producing any sound at all approaching to that of the heart's contraction.

'2. If this were true, the large arteries rather than the heart would be the principal seat of the sound. . . .

'3. The chief objection to the closing of the auricular valves being the sole cause of the sound is, that it must be instantaneous, and confined to the first part of the ventricular systole, whereas the first sound is prolonged through the whole period of its action.

'4. In my first edition I suggested the muscular contraction itself as a sufficient cause of the first sound.'

After adverting to Dr. Wollaston's original observations on muscular sound,[1] and how in its more forcible and sudden varieties, it is quite adequate to produce the sound of ventricular systole, I conclude,

'I shall not pursue this explanation further; for I introduce it here only interrogatively, as deserving a place among other views, on the claims of which future observation and experiment must decide,' p. 200.

'We now come to the subject of the second sound, which although

[1] *Phil. Trans.* 1810.

certainly occurring at the moment of the diastole of the ventricles, has received several different explanations as to its physical cause. The only two, which appear tenable in the present state of our knowledge, are: 1. The reaction of the arterial columns against the semilunar valves; 2. The impulse of blood from the auricles refilling the ventricles at their diastole.

'1. The first of these bears a very inviting aspect; for the second sound is just of that abrupt flapping character, that might be supposed to result from the action of a thin valve. But it may be objected to this view that the arteries more than the heart should be the seat of the sound. The tense column which throws these valves into play, should receive their shock more forcibly than the heart, which at that moment has become flaccid, and ill adapted to transmit sound through the whole of its substance. . . . Still I do not consider this view entirely disproved, and it should claim attention in future investigations.

'2. This is Dr. Hope's explanation of the second sound'; and after considering his arguments for it, I conclude,—'Although for acoustic reasons before stated, I should be inclined to place the seat of the sound in the parietes of the ventricles, rendered momentarily tense by the sudden influx of blood, rather than in the motions of the fluid (Hope), I incline to this cause of the second sound. It needed, however, as Dr. Copland observed, further confirmation. I would add, that the whole subject of the sounds of the heart requires further research; and I shall have accomplished a good object, if these remarks should induce Dr. Hope, who has already thrown so much light on it, to follow up the investigation until he shall have cleared away the difficulties and doubts that at present beset it.' Appendix to 2nd ed. 1833.

In the publication of this second edition I had a number of extra copies of the appendix on the sounds of the heart printed for distribution among friends, to interest them in the subject, and in the experiments which were, sooner or later, to be performed to settle the doubtful points. But I still wished Dr. Hope to take the lead in this work, and frequently urged him to do so, before my visit to Edinburgh. On my return from thence, I told him of my endeavour there; and again recommended him to take up the matter, offering my assistance. In October and November following, he did make two attempts; at one of which I was present; but neither of these led to any results. After a further delay of two months,

it became more apparent to me that the experiments would not be efficiently performed, unless I took on myself the task of arranging and conducting them; and as I had to prepare a third edition of my book, which was now called for, and as I felt bound to complete the inquiry which I had before started, in February of the following year, I made arrangements for performing the experiments myself. My first step was to get from Sir B. Brodie some woorara poison, which he had long ago (before he knew Dr. Hope) promised me for experiments, where it is wanted to destroy sensibility, without stopping the heart's action; which, by artificial respiration, may be kept up for an hour or more after death. Then I obtained from the lecturers in Kinnerton Street the use of their dissecting room; and explained to them the nature of the inquiry, and requested their presence and aid. Several others were also invited, including Dr. Hope. I had several times conversed with him on the objects and methods of the experiments; and the practice afterwards adopted by me was partly, but not entirely, suggested by those conversations. Although I availed myself of his assistance, and that of others, the experiments were performed entirely under my direction, and at my sole expense, as the letters below will fully attest. [1]

[1] (*From the late* Mr. Field, *Veterinary Surgeon.*)

224 Oxford Street: August 16, 1839.

Dear Sir,—In reply to your note, I have much pleasure in stating that I remember perfectly well your calling on me, and saying that as Dr. Hope would not proceed with the experimental investigation of the sounds of the heart, you intended to do so yourself: at the same time you asked me where you could procure animals, and invited me to be present at the experiments. This was, I believe, in the early part of 1835, certainly prior to the performance of your experiments at the Kinnerton Street School.—I am, Dear Sir, yours faithfully, John Field.

To Dr. C. J. B. Williams.

(*From* Mr. Tatum, *Lecturer on Anatomy, Kinnerton Street.*)

7 Berkeley Street: August 16, 1839.

My dear Williams,—I have no hesitation in stating, in answer to your note, that you, and you only, applied to me for the use of the dissecting rooms in Kinnerton Street, in February 1835, for the purpose of performing experiments to explain some doubtful points relative to the sounds of the heart, alluded to in your appendix, published in 1833. I assisted at some of those experiments, and I considered them to be solely under your direction.—Ever most truly yours, Thos. Tatum.

It may seem strange that I should revert with so much minuteness to a personal controversy that very little concerns any but those immediately engaged in it: but the extraordinary misrepresentation of Dr. Hope in the successive editions of his work on 'Diseases of the Heart,' in 1835 and 1839, and reiterated after his death in a memoir published by his widow, have forced upon me the duty of reply. As already stated, I did publish in 1842 a small pamphlet entitled 'A Brief Account of Facts with regard to certain Researches on the Heart, in Reply to Statements in a Memoir of Dr. Hope:' but this had only a limited circulation: and I could not but feel reluctance to pursue the matter, to the disparagement of one, who had been my friend, and who now

(*From the late* Mr. Good, *Assistant Surgeon to the Lock Hospital, &c.*)

15 New Burlington Street: August 17, 1839.

My dear Williams,—I very well remember your giving me your appendix on the Sounds of the Heart, &c., and you afterwards asked me to be present to witness certain experiments on the motions and sounds of the heart which you purposed performing on asses at the Anatomical Theatre in Kinnerton Street. I was consequently present during the performance of the majority of these experiments; and on several occasions you consulted me as to the best mode of performing them, and requested me to assist you, which I did. I certainly considered all the experiments performed at your suggestion, and that they were under your entire direction.—Yours very faithfully,

W. H. Good.

(*From* Mr. Henry Charles Johnson, *Demonstrator of Anatomy, &c.*)

6 Saville Row: August 22, 1839.

My dear Williams,—You, I remember, asked my permission to use the dissecting rooms in Kinnerton Street, and requested my assistance at the experiments you were about to perform. You explained also to me the nature of the inquiry, and desired me to peruse the appendix to which you have alluded. I certainly considered that the experiments were made under your direction, not having had communication with any other person on the subject; and it was not until after their completion that I was made acquainted with Dr. Hope's claim to participation in their arrangement.—Believe me, dear Williams, yours very faithfully, Henry Charles Johnson.

(*Statement of the* Porter *to the Anatomical Theatre.*)

August 17, 1839.

I recollect well that in February 1835, Mr. Tatum and Mr. Henry Charles Johnson ordered me to get the room ready for Dr. Williams, that he might perform some experiments. After these experiments were performed Dr. Williams paid me for the animals, and I received no order or payment from any other person. (Signed) Henry Hemson.

Porter to the Anatomical Theatre,
Kinnerton Street.

had passed away from the scene of strife. I hoped that the exact statement of the facts which appeared in my own successive editions of 1835 and 1840 would suffice to counteract past misrepresentations; and that truth would eventually prevail. But all my works have now been for many years out of print; and in several recent allusions to these researches, impressions arising from Dr. Hope's misstatements seem still to prevail, to my discredit and disparagement. I therefore feel bound to again vindicate my character, by reproducing the narrative with its corroborative testimony.

Reserving for another volume fuller details, I will here briefly mention the chief results obtained, which in most respects satisfactorily decided the questions proposed in my appendix; and established with some precision what are the true causes of the sounds of the heart.

That the first sound is not caused by the rush of blood into the great arteries, is proved by several observations, in which the first sound continued, although little or no blood could have been thrown into the arteries. Also by the fact that the sound is less audible over the large arteries, than over the heart.

That the first sound is not caused solely by the closing of the auricular valves, is evident from its continuing when the closure of these valves was partially or completely prevented.

That the first sound is not produced by the collision of the particles of fluid in the ventricles, appeared from several observations in which the sound continued, without blood in the ventricles.

That the first sound is produced by the muscular contraction itself, may be considered as proved by observations in which it was heard in the heart with the valves cut, and without blood.

That the second sound is produced by the reaction of the arterial columns of blood, tightening the semilunar valves at the ventricular diastole, is clearly proved, not only by these valves being the especial seat of the sound, but also by numerous observations, in which the cessation, or the reproduction of the sound, was effected, respectively, by the suspension, or the restoration, of the action of these valves.

It being thus proved that the first sound is essentially produced by the tightening of the muscular walls of the ventricles in their systole; and the second sound by the subsequent sudden tightening of the semilunar valves at the ventricular diastole, it is easy to perceive how various circumstances regarding the blood, and regarding the respective valves, may increase, or diminish the sounds, as they augment or impair the degree or abruptness of the tightening or tension of these parts. For further details I must refer to the second volume.

And now about the ownership of these experiments. As Dr. Hope had instituted experiments on several occasions, and had written a work on the Heart, for several years I refrained from taking up the subject; but did what I could to assist him and to urge him to further complete his researches. But when, after two attempts without results, he continued to leave the matter in abeyance, and the demand of a new edition compelled me to take the initiative, for which previous study and publication on the points at issue had specially qualified me, I then took possession of the field,—by undertaking, managing, directing, carrying out the whole inquiry, and defraying all expenses. After all this, I was not a little astonished to find that he claimed 'at least an equal share in the experiments,' on the plea of his having 'invented the mode of performing them,' and he disputed my right to publish them as my own. He wished the matter to be settled by arbitration of two friends, naming Sir B. Brodie as willing to act for him. I was so convinced of the clearness of the case, that it seemed an unnecessary formality to name another arbiter on my part; and I was quite willing to abide by Sir B. Brodie's decision, which was as follows:—

14 Saville Row: March 19, 1835.

'My dear Sir,—I understand from yours and Dr. Hope's statements,—

1st. That you and Dr. Hope have both been engaged for a considerable time in researches respecting the pathology of the heart.

2ndly. That Dr. Hope formerly instituted experiments with a view to illustrate this subject, at which he invited you to be present.

3rdly. That since then, you and Dr. Hope have been in the habit of discussing questions arising out of these experiments; and that you contemplated making others conjointly.

4thly. That you frequently urged Dr. Hope to proceed with the projected experiments, but that his various engagements prevented his doing so.

5thly. That at last you applied to Mr. Tatum for the use of the new dissecting room; procured animals for the purpose of the experiments; asked several gentlemen to assist you in making them; and invited Dr. Hope to them also.

In addition to all this, I am informed by some of the gentlemen who assisted you, that the experiments were made almost entirely under your direction.

Now if these statements be correct, I own that I do not see that Dr. Hope can well complain of your making use of the experiments in the new edition of your work now in the press; at the same time, I am of opinion that in doing so you should be careful to explain what share Dr. Hope had in projecting and planning the experiments in the first instance, and that you should acknowledge whatever assistance you derived from his suggestions at the time of the experiments being made.

I am, dear Sir, always yours truly,

Dr. Williams. B. C. BRODIE.'

Every one, to whom I have shown this letter, has understood it, as I did, as recognising my full claim to the experiments,[1] whilst it requires me to acknowledge whatever assistance I may have derived from Dr. Hope, both in planning and in performing them. This acknowledgment I fully and scrupulously made, both in general terms and in every detail. In fact I gave Dr. Hope more credit than was his due. He founded his claim to these experiments on his having 'invented' a mode of performing them, and having written certain propositions descriptive of this mode. But even on this ground of claim he overlooked the prior contributions to this 'invention,' in my appendix published more than a year before; and the several consultations which we had together on the subject. My experiments were conducted in reference, not to Dr. Hope's propositions, but to directions of my own, written before the

[1] It was objected by Dr. Hope in his work, and repeated in the Memoir after his death, that Sir B. Brodie made a mistake in this arbitration; but no proof has been given of any such mistake having been made. I was printing the experiments for my work, when Dr. H. first claimed 'at least an equal share in them,' requiring me to stop the press, until the claim of each should be decided (*Memoir*, p. 155). Sir B. Brodie's letter established my claim only.

performance, with the express object of deciding between the views stated in my appendix.

And the results of these experiments were more satisfactory and decisive than any that preceded them; and as they have been generally confirmed by others that have been performed since,[1] both in this country and in America, they may be considered as having laid the first foundation of a correct knowledge of the motions and sounds of the heart. But the satisfaction arising out of this success was much marred by the sad and unexpected misunderstanding and antagonism of my former friend and fellow-collegian; who, instead of abiding by the decision of his own referee, whose impartiality and competency were universally acknowledged, continued to appropriate to himself the credit of the whole investigation, and to deny to me even the least participation in it. But this

[1] Of these subsequent investigations, the First to be noticed, is one by Dr. Hope, in August 1835, in which he had the advantage of the assistance of Drs. Latham and Watson, and Mr. Herbert Mayo, a most able experimenter. The results were satisfactory, and all in confirmation of the conclusions from my experiments.

2. Dublin Committee of the British Association for the advancement of Science, August 1835. Report refers only to the motions of the heart.

3. First Report of the London Committee of the British Association at Bristol, 1836, by Drs. Clendinning, Todd, and myself. Generally confirmatory of my previous conclusions; but too absolutely excluding the share of the auriculo-ventricular valves in the first sound. In our conferences, Drs. Clendinning and Todd were sceptical as to the sufficiency of muscular tightening, as the cause of the first sound, until I showed them that similar, and even louder, sounds could be produced by sudden forcible contractions of the abdominal muscles.

4. Second Report of London Committee of British Association for Advancement of Science on Motions and Sounds of the Heart, at Liverpool, September 1837. By C. J. B. Williams, M.D., F.R.S. Reporter, and Dr. R. B. Todd: chiefly on Murmurs.

5. Drs. Pennock and Moore, in 1839, conducted a series of observations on the motions and sounds of the heart, confirming mainly those previously made. They first noticed the production of sound by the auricles, when their contraction is vigorous, in a recently slain animal. A few months after, I observed the same fact in one of Dr. Clendinning's experiments at the Marylebone Infirmary. In the exposed heart of a recently killed animal, the ventricles had ceased to beat; but I saw the auricles contracting so vigorously and regularly, that I drew Dr. C.'s attention to it, saying, 'Such motions ought to produce sound:' and so it proved; each contraction gave a short distinct sound, somewhat like a weak second sound of the heart. The fact was recorded in the Report of 1838, 1839, and 1840, which formed the sixth experimental contribution to this subject. *Report of British Association*, &c., 1840.

infatuation and perversion of the truth were very much confined to his own publications: the chief authorities and journalists of this country, of the Continent, and of America accepted my designation of the experiments, as 'instituted and performed by myself, with the assistance of Dr. Hope and others.'

The publication of the third edition of my work, with the account of the Researches on the Heart,—took place in March 1835, under the title 'The Pathology and Diagnosis of Diseases of the Chest, Illustrated especially by a Rational Exposition of their Physical Signs.'

The work had a rapid sale in this country; was reprinted in America; and translated into German and Swedish. Copious extracts appeared also in the French journals. The German translator, Dr. Velten, on sending me a copy of his translation, mentioned that the book had been much recommended by Professor Nasse of Bonn. I afterwards heard that a second edition was soon called for; and that the book was introduced in almost all the German Medical Schools.

CHAPTER XIV.

VARIETY OF EVENTS. 1835-1837.

Elected F.R.S. 1835—Reasons for not having taken an Active Part in the Society. Visit to the first Meeting of the British Association at Dublin—Hospitable Reception; and Lively Discussions on Heart Sounds—Rival Claims of Nobleman and M.D. for Presidency for Next Year. Horse Exercise in London and the Country. 1836. First Course of Lectures on the Chest in Kinnerton Street—Attended by Practitioners and Students. Summons to Paris to Deranged Relative. Fall from Horse: Fractured Collar-bone. Visit to British Association at Bristol—Report on 'Heart Sounds,' &c., by Drs. Williams, Clendinning, and Todd—Own Paper on 'Ear-trumpets'—Ovation of Mr. Andrew Cross. Horseback Journey in Kent and Sussex—Sudden Illness and Death of my Father—Birth of our Eldest Son Seven Years after our Marriage.

Early in 1835 I was elected Fellow of the Royal Society. My certificate of recommendation was signed by Aylmer Bourke Lambert, Francis Chantrey, Isambard Brunel, and W. T. Brande, as well as by Sir H. Halford, Sir B. Brodie, and other leading members of the medical profession. My friend Dr. Maton advised me to get some non-medical names to head the list, as there was a feeling rising in the Society against the admission of too many belonging to the profession; and my election was not without opposition. I was introduced by Professor Faraday in April, 1835. I have now been an F.R.S. for forty-eight years; and it may appear strange that I have never contributed to its transactions and hardly taken any part in its proceedings. The refusal to publish my first paper deterred me from soon offering any other in the early part of my career. I found the British Association a far more congenial institution for the discussion and publication of research; and I contributed several Reports to its transactions: and when my reputation became more established, and there was little probability of any contribution which I might offer being rejected, I became so busy with professional and pro-

fessorial work, that I had not time to do anything for the Royal Society; and I seldom attended its meetings. These meetings have become much more interesting of late years by the admission of verbal discussion: but the internal government and working of the society have been much hampered by the introduction of injudicious and illegal restrictions in the election of Fellows; and the society appears to me to fall far short of what its founders intended it to be, and of what it ought to be, as the leading Scientific Society of the mightiest civilised country in the world. This subject will claim our attention on a future occasion.

In the summer of 1835, together with my wife, I visited Dublin at the meeting of the British Association; and we were welcomed with true Irish hospitality; and formed several valued friendships, which have endured through many years of our lives. Of these, nearly all have passed away: Sir Henry Marsh, the Cramptons, Graves, and Stokes, R. Adams, Hudson, McDowell, among them. Dr. Evory Kennedy happily survives, now living in London; and we can recall our pleasant meetings at the Rotunda of Dublin, subsequently at Castle Belgard; and more recently at Cannes. That first meeting of the Association in Dublin was a most successful one, and displayed well the aptitude of the Irish for impromptu discussion. The Report of the Dublin Committee on the Sounds of the Heart gave occasion for a fine field-day in the then flourishing Medical Section,[1] and my own recent experiments supplied further material for a lively debate. We had

[1] In the early meetings of the Association there was a place among the sciences for Medicine, under the section, *Anatomy and Medicine*. The term was afterwards changed to *Physiology*; and more recently to *Biology*. The indisposition of what are now called *Physicists*, to fraternise with their congeners, *Physicians*, was exemplified in something which I witnessed in the General Committee at this meeting. The ascendant party, Geologists and Physicists, named the Marquis of Lansdowne as President of the next meeting at Bristol. Others thought that Dr. J. C. Prichard, author of the *Natural History of Man*, and a resident, had a better claim. The Rev. Professor Robison of Armagh protested that he had never heard of Dr. Prichard, and could not tell in what department of science he was known. 'That is not Dr. Prichard's fault!' cried half-a-dozen voices, among which, that of Dr. Graves, was not the least indignant. But the nobleman prevailed over the founder of British Anthropology; and Lord Lansdowne became president of the Bristol meeting.

a pleasant excursion among the Wicklow Mountains after the meeting; and returned by Liverpool, to make a first trial of the railway to Manchester, which had not long been opened.

Although hitherto the only recreations mentioned in my professional life have been those in art and science, it must not be supposed that we had not also holiday excursions, like other folks. My wife's health rendered it necessary that she should often go out of town for change of air. Ivy Rock, a country cottage with grounds on the high range between the Severn and the Wye, in Gloucestershire, was frequently at her disposal; and there were annual visits to the sea-side, at Ramsgate, Brighton, or Hastings. It was impossible for me to indulge much in these excursions; for even if I had not much practice to detain me, it was a primary duty to be at home, waiting for practice, as the only chance of getting it. But for two or three weeks in the autumn, and for two or three days at other times when not positively engaged, I did manage to snatch a few holidays; and never without much enjoyment and benefit.

Then before practice became very pressing, that is, during the first ten years in London, I was able to take pretty regular horse exercise, which was salutary as well as enjoyable. My wife had been accustomed to it from childhood; and when I could not accompany her, rode with a riding master's party, and became a very expert horsewoman; not a little useful among a number of young friends, emulous of the health-giving and graceful accomplishment. She had her own favourite horse, a long-tailed chestnut mare, with black spots, which served us faithfully for ten or twelve years.

1836 was rather an eventful year. In the spring I commenced my first course of lectures. My excellent and faithful friend Thomas Tatum, Senior Lecturer at the Anatomical School in Kinnerton Street, connected with St. George's Hospital, invited me to make use of his theatre, by giving lectures on the Diseases of the Chest. It was just the opportunity which I most desired. I had refused to connect myself with a subordinate school from which proposals had been made of a joint lectureship; choosing rather to wait than to

begin in a doubtful position. This invitation came from the highest quarters, and left me free to choose and treat my subject in my own way; and although there was no lack of material, interesting and useful for a course of lectures, I felt conscious of the need of practice and experience in the art of public teaching. I had no expectation of making money by these lectures. It was not probable that many students would come, as such lectures would not qualify for examinations: but some few had expressed a wish to attend, and by inviting the gratuitous attendance of practitioners, there was a chance of an audience. I took great pains, making large drawings, and diagrams, and having apparatus and models, to render the lectures as demonstrative as possible; knowing from long and varied experience, how much effective teaching depends on the exercise of all the senses, as well as of the understanding. This demonstrative method of teaching has now become so general, that it may seem superfluous to mention it; but at that time, fifty years ago, it had hardly been attempted. I had an entry of nine students, and nearly twenty physicians and surgeons; a fair proportion continued to attend throughout the course, which consisted of thirty lectures, with the following title:—Lectures on the Physiology and Diseases of the Chest; including The Principles of Physical and General Diagnosis, and their application to Practice.

Among the practitioners who introduced themselves to me at these lectures were several estimable men, whose friendship I enjoyed long after; but their teacher has survived them all.

Dr. Roscoe, son of the Liverpool patriot; Dr. Sandwith of Hull, father of Dr. Humphry Sandwith, C.B., of Kars; (who was also my pupil, later at University College); Dr. Davison, who practised for some years in Paris; Dr. Harvey, of Leicester Square, who practiced as an aurist; Mr. Woolley of Brompton; and Mr. Streeter of Harpur Street, highly respected general practitioners. Except Dr. Davison, they were all considerably my seniors; and evinced a rare superiority to the common prejudice against youth and novelty. If they derived any advantages from my instruction, I profited also by their hints and experience; and I look back on those courses (for it was repeated the next year) as a

most improving preparation for the greater office which I had afterwards to undertake.

At the termination of these lectures, I had a hasty summons to Paris on account of a relative, whose eccentricities had carried him beyond the tolerance of French society; and he was consigned to a *maison de santé*. His Father wrote, in great agony of mind, to urge me to go to his rescue. I had attended him on a former occasion for symptoms threatening acute mania; when he was promptly and permanently relieved by bleeding from the temporal artery and cold douches. On arriving, I found he had already been bled and subjected to warm bath with cold douche to the head, and that he was rational, and no longer excited except from the annoyance of his position. I ventured to release him and take him with me, notwithstanding the protest of his doctor:—'Eh bien! vous êtes médécin, et devez savoir: mais prenez garde à lui; c'est un homme très fort, très puissant, et il est tout capable à vous tuer!' I kept him with me a few days in apartments, without any attendant; and as he proved quite tractable, and did no further harm than boring me with his conversation, I returned to England, leaving him at Rouen, to follow at leisure. He recovered completely; and although always eccentric, had no return of the malady for several years, when it did recur at intervals until his death a few years ago at the age of seventy. I always had a strong disinclination to undertake the care of cases of insanity, and as a rule refused to do so, referring them to those physicians who had made mental diseases a special study. My friend Sir Thomas Watson long ago told me that he did the same.

Soon after my return from Paris, when riding in quest of a country retreat for the autumn, I was thrown by my horse rearing, and falling backwards; and my right collar-bone was broken. It was the only fall from horseback that I ever had. Although skilfully treated by my friends Brodie and Tatum, I was partially disabled for two months. Nevertheless, I managed to attend the meeting of the British Association at Bristol; being concerned in the First Report to be made of the London Committee on the Heart Sounds, with Drs. Clendinning and Todd; and I had also a paper to communicate to the

Physical Section on the construction of Ear-trumpets. These subjects have been already referred to. On this occasion we were guests of Dr. and Mrs. Francis Fox, at Brislington, long intimate friends of my wife. We met there Dr. Henry of Manchester, the eminent chemist, and his son, Dr. W. H. Henry, whom I have the pleasure to count among my excellent and congenial friends to the present time: his admirable wife, and several members of his family having been under my professional care.

This meeting of the British Association, if not so brilliant as that at Dublin, was full of interest; and a great sensation was caused by the ovations of Messrs. Sedgwick, Murchison, Conybeare, and others, in unearthing a native philosopher, Mr. Andrew Cross, who, unknown in the wilds of the Mendip hills, had been pursuing profound and wonderful researches in galvanic and terrestrial science with unexpected results. There was something fascinating in such vast modes of interrogating nature by miles of electricity and months of action; but I do not know that any definite response came out of it. But when the same rustic genius a while after discovered the evolution of an acarus from a solution of silica, faith in native philosophy suffered an abatement. The meetings of the British Association were enlivened by the enthusiasm with which anything like discovery was received; and although not always confirmed by the test of more deliberate and strict inquiry, the encouragement given was a genial contrast to the censorious spirit often predominating in the deliberations of the Royal Society.

On returning to London after this meeting, both my wife and myself felt the need of some change, more than that of an ordinary holiday in the country. So we arranged to take a leisurely journey on horseback, through Kent, Surrey, and Sussex, making Seven Oaks, Tunbridge Wells, and Hastings, our chief halting places. Travelling from ten to fifteen miles a day; and continuing daily excursions from the several stations, we enjoyed many hours in the open air in delightful scenery; and with very moderate fatigue. My broken bone soon united; and we both gained flesh and strength in a more satisfactory manner, than in an ordinary country or sea-side excursion.

On our return early in October, we were met at Eltham by a messenger on horseback, with a letter announcing the serious illness of my Father at Ryde, now in his eighty-seventh year. Thither I immediately repaired; and found him suffering from an apoplectic stroke; which prostrated his mental and bodily powers, and in a few days terminated his life.

That he was loved and venerated by all his children, was the normal result of a long life of probity and amiability of character, and of paternal affection which never failed: but more than others, I seemed to owe him affection and gratitude, for the indulgence with which he had yielded to my bias in favour of studies not familiar to him, and had afforded the means to pursue them on an extended scale. I was thankful that his life was spared long enough to be gratified at my success; and, I was told by my sister, that in the last year of his life, nothing secular gave him so much pleasure as the news, that the book, which he first urged me to publish, was translated into foreign languages. How much more blessed the translation of his own name to the Lamb's Book of Life, among those, who through the atoning Blood, have their names written in Heaven!

He had been blessed with a vigorous constitution, and performed his duties in the ministry for upwards of sixty years, with hardly any intermission; usually taking three services on every Sunday, until about two years before his death. He owed more to the natural vigour of his health, than to salubrious habits. He used to pass most of his time in reading and writing; only once or twice a week mounting his horse for a long ride and a gallop on the downs. He was a firm believer in the salutary effects of cold water; and many years persisted in the daily use of a douche bath at a mill-pond. He used to tell us of the wonderful success, which had resulted from his recommendation of the use of cold affusion in desperate cases, at a period, long before that of Dr. Currie, or the modern water-cure.

One event, which would have much gratified my dear Father, had he lived to know it, was the birth of a grandson, which occurred in the following spring. We had been married

more than six years; and had almost given up thoughts of having children, when this surprise came; and strange to tell, was followed by eight more births in the course of the next twelve years. It would be ungrateful not to acknowledge the gracious dealings of God in thus bestowing His blessings with considerate delay, at times better suited to our circumstances, than if the charge and anxiety connected with a large family had come earlier. Six years without those blessed encumbrances, gave time to my wife to recover health under the trying change from country to town; and left me more free to work at the literature and practice of my profession, than I could have been, with an early intrusion of little ones.

As it was, we were well established in housekeeping and town life before the family came; and although my professional income was considerably less than my repute, and did not come up to a third of my expenses, it was steadily on the increase, especially in consultation practice, and did not seem likely to slacken. My lectures in Kinnerton Street were repeated the following year, with fewer paying students, but more practitioners; who although they paid no fees, brought patients, and benefited me by friendly interest.

CHAPTER XV.

PROFESSIONAL PROGRESS AND DISTINCTIONS, &c. 1836–1837.

Elected President, successively of Harveian, and Westminster Medical Societies —Abstract of Essay 'On the Acoustic Principles of Percussion' at the Latter—Reminiscences of Dr. James Johnson, and Dr. Thomas Addison—Reminiscence of Dr. William Stroud, Founder of the Harveian Society. Experimental Investigation of the Causes of *Murmurs* in the Heart and Arteries—Successful Imitation and Explanation of all these Sounds—Varieties Explained—Venous and Anæmic Murmurs—Results Reported to Meeting of British Association at Liverpool—Impressive Service and Sermon by the Rev. Hugh McNeile—Successful Exhibition of Experimental Explanation of Murmurs, but Report in Public Meeting spoilt by Dr. Roget's bad delivery.

In the two winter seasons about this period, the Harveian Society and the Westminster Medical Society did me the honour of electing me president; and I frequently attended their meetings. Among several communications which I made on these occasions, I may mention one, 'On the Acoustic Principle of Percussion,' which was printed in the 'London Medical Gazette' in January 1837, and has hardly ever been noticed since, although it was mentioned by Dr. Forbes at the time, as marking progress in the subject.

I pointed out that the ordinary sounds of pectoral percussion do not depend on the *longitudinal vibrations of the hollow* in the lungs and air tubes; otherwise they would be altered by closing the glottis, or by varying the size of that hollow in breathing—which they are not:—but stroke sounds depend on the *transverse vibrations of the solids*—chest-walls and contents—and are longer, freer, and deeper or more resonant, when these are more aereal, as well as solid—shorter, more frequent and of higher pitch, where the chest and its contents are more solid, and less aereal—and shorter, and more dead and dull, with only liquid or soft solid underneath the walls.

Where tubes come near the surface, as at the trachea, the *longitudinal* vibrations become audible in the tubular note, which is stopped by closing the glottis. And where tympanic cavities lie underneath, as over pneumothorax, and over stomach, or intestines, a *drumlike note* and *tinkling echo* are added to the transverse vibrations, giving different varieties of tympanic, humoric, and tinkling sounds. This view calls attention further to the state of the walls of the chest, or abdomen, as capable of increasing, diminishing, or deadening the sounds, by the respective properties, elasticity, rigidity, or flaccidity; and, if fully followed out in detail, will aid much in explaining and guiding the methods and practice of percussion.

In connection with the Westminster Medical Society, I cannot miss the opportunity of recalling a pleasing reminiscence of two men, who took a prominent part in its discussions at that time, Dr. James Johnson, and Dr. Thomas Addison. The former was the enterprising and indefatigable founder and editor of the 'Medico-Chirurgical Review,' a journal of considerable circulation and great utility, which by analytic reviews and periscopic reports, made known to the profession a great amount of the medical literature and news of the time. But in the debating society he was by no means a bookworm or dogmatic critic. In his North Irish brogue, and racy narrative, he would recount his practical experiences in a way acceptable to his audience, chiefly general practitioners; and although himself a sufferer from hypochondriasis and indifferent health; he always seemed genial and hearty in society. Dr. Thomas Addison was a man of much higher abilities. As a lecturer and speaker, he had few equals; and as a clinical teacher and hospital Physician, he was most successful. His partiality for the Westminster Medical Society was remarkable and of great service to it: but he was rather a nervous shy man, and hardly attained in the profession the position for which his talents and attainments qualified him.

The Harveian Society was first formed by Dr. William Stroud, for the meeting of medical practitioners in the North West of London, to read papers and discuss matters of profes-

sional interest. Dr. Stroud was a learned earnest man, with strong religious convictions, but much intelligence, and with a vein of natural humour, which enlivened his speeches and made him an agreeable debater. He wrote a history of the Royal Medical Society of Edinburgh; and more recently an essay on the Death of Christ, which he attributed to rupture of the heart. He was the first to introduce the use of the flexible stethoscope, which has peculiar advantages for certain purposes.

In the summer of 1837, I worked for the Second Report of the London Committee of the British Association on the Sounds of the Heart; and I obtained the principal facts, before joining with Dr. Todd, Professor of Anatomy at King's College, who was to be my confederate. Our subject was chiefly directed to the causes of those remarkable and various accompaniments of the heart's action, called *murmurs*, which were compared by Laennec to the noises of blowing, filing, rasping, sawing, purring, cooing, &c. In my first publication in 1828, was the following opinion :—

'I am disposed to think that were we better acquainted with the laws of the production of sound, we might find that it may be excited by the motions of liquids, as well as by that of air, in or against solids of a particular form[1]; and that we might find a satisfactory explanation of the phenomena in question in the moving mass of blood being thrown into sonorous vibration by some modification in its course. Such a modification might be produced by thickening or irregularity in one of the valves of the heart, or by spasmodic action of some of the columnæ carneæ, by any obstacle in the calibre of an artery, &c.; and these causes might, as in the analogous case of air, render the passage of the blood sonorous, instead of, as it usually is, silent.'

These anticipations were fully verified by the results of our experiments. Dr. Corrigan and others at Dublin had already found that the passage of water through india-rubber tubes could produce sounds like the *bruit de soufflet*; but he ascribed

[1] The invention of the Siren by M. Cagniard de Latour, has experimentally demonstrated this acoustic principle by the production of, not only sounds, but musical notes, by a motion of a liquid in tubes, and through apertures. 1835.

them to undulations in the water beyond the obstruction, rather than to vibrations in the tube itself. A few extracts from the report will suffice to show the conclusive character of the experiments.

'1. A caoutchouc tube, 18 inches long and $\frac{3}{8}$ths of an inch in diameter, was attached to the stopcock of a reservoir, in which was water to the depth of from 8 to 10 inches. When the water flowed perpendicularly through this tube, (the air being first expelled, and the lower end of the tube kept under water in a recipient below,) no sound was heard: but on pressing any part of the tube, so as to diminish its calibre, a blowing sound occurred at and below the point of pressure; and this sound became louder and more whizzing, as the pressure was increased. The loudest sounds were heard at the lowest end of the tube, (where the current was strongest), and they sometimes became quite musical; and by increasing the pressure at regular intervals, a periodic increase, and raising of the tone was produced, closely resembling the sound in the neck, to which the French have given the name of 'bruit de diable.' . . . .

'3. The same tube being adapted to the stopcock of a water supply-pipe, through which a current could be let to pass with more or less force, it was found possible to imitate every variety of blowing, whizzing, or musical murmurs, by varying the pressure on, or the obstruction in, the tube, or by altering the force of the current. When the current was strong, the least obstruction caused a murmur; but with weaker currents, a greater obstruction became necessary for the same effect. An obstruction which, with a weak current, caused a blowing sound, gave with a stronger current, one of more whizzing character. Grating or rasping sounds were best obtained by the action of a strong current on a knotted thread across the diameter of the tube. The musical or uniform sounds resulted from a moderately strong current through a considerable impediment: increasing the force of the current, or the degree of obstruction, rendered them whizzing and imperfect: diminishing the current or the obstruction, converted them into a simple blowing. When a sound was of an appreciable pitch, its note was higher in proportion to the force of the current and the amount of obstruction—a fine forcible stream producing the highest note. Sometimes, however, with a strong current, a loud trumpet note would be set up, which was not altered in pitch, but only in force, by changing the strength of the current. This kind of note produced visible and palpable vibrations of the tube below the

obstruction, and seemed to have relation to the length of the tube. In many instances these vibrations closely resembled the purring tremors and thrilling vibration, sometimes felt in the region of the heart and large arteries. Musical sounds of a more variable character, like the cooing of a dove, the humming of a fly, or the whistling of wind, were produced with weak currents passing through a tube much obstructed. The pressure of a column only two or three inches high, was sufficient to give acute whistling notes, which were sustained, although varying, even when the water, that passed, fell only in drops from the end of the tube.' . . .

'From these and other experiments it was plain, that a partial obstruction, causing vibrating resistance to the current, is the essential physical cause of all murmurs produced by the motions of liquids through tubes. That any condition of the walls beyond the obstructing point is not, as it has been supposed, essential to the production of these sounds, is proved by the fact that they may be produced by an obstruction at the terminal orifice of the tube, where there is no tube beyond to cause them.' . . . 'In short the laws of the production of sounds in liquids so closely resemble those which regulate the same phenomena in air, that it is unnecessary to enter into further detail.'

Some of the above experiments were repeated with water rendered glutinous with size; and it was found that the sounds were not so readily produced, as with plain water, and required a greater force of current. This explains the fact that murmurs occur more in the living body, in states of anæmia, when the blood is thin and more like water.

The Committee made observations on the production of murmurs in the arteries and veins of the living body; and found them all amenable to the same laws. They confirmed the discovery, recently made by Dr. Ogier Ward, that the remarkable continuous murmur often heard in the neck, called by the French, *bruit de mouche*, or *bruit de diable*, has its seat in the jugular vein, and can be arrested by pressure on the vein above.

One point in this report needs correction; and I feel called on more to make it, as the inaccuracy lay with myself. It states that the Committee found venous murmurs to occur not only in chlorotic or anæmic subjects, but also in healthy individuals. Now the supposed healthy individual was myself,

not considering that I was otherwise than healthy. But I afterwards had reason to conclude that I was not at that time in good health, and that my blood was in a poor condition. Further experience proved to me that murmurs in general, and venous murmurs particularly, are more readily produced in anæmic persons, as stated by Andral and Bouillaud: and this admission negatives the qualifying clause of the last conclusion.

'Although it appears that the venous sounds are not necessarily signs of disease, yet the circumstance proved by the Committee, that water is thrown into sonorous vibrations more readily than a liquid of more glutinous character, renders it probable that these and other sounds, depending on the motion of liquids in the circulation, may be more easily produced where the blood is thin and deficient in quantity; and under these circumstances, they may occur in the neck, from the mere pressure of the muscles on the jugular veins.'

The report was presented to the Medical Section of the British Association at its first meeting at Liverpool in 1837.

I have a vivid recollection of attending service in the church of the Rev. Hugh McNeile, on the Sunday preceding the meeting. I did not know him, but I was at once struck by the manner in which he read the service;—solemn, emphatic, and expressive;—with a noble barytone voice—an utterance so distinct, that not a syllable was lost; and a cadence so natural, as to be free from either monotony, or sing-song: the prayers were devoutly prayed: the Scriptures, simply and reverently read, as the word of God: and the sermon spoken, with the earnestness and eloquence becoming a message from God. I think that I never heard a more perfect specimen of pulpit oratory. I do not recollect the text; but the chief subject was the utter inadequacy of human science to teach man religion. The sermon did not meet with the full approval of the philosophers, who discussed it at the hotel where I was staying: the Rev. Professor Sedgwick, especially, denouncing it as 'flimsy and narrow-minded—surely science gives some light of religion; though it be but a glimmering.' I think the Professor's view is supported by Rom. i. 19, 20. I have long been led to regard the book of nature, no less than the book

of Revelation, as God's word and work; to be reverently and truthfully, but *naturally*, studied and interpreted, through the senses and intellect, with which He has endowed us; even as the Revealed Word is to be received *supernaturally*, through faith in the Incarnate Word, and the inspiration of God's Holy Spirit.

As Dr. Todd was not present at the meeting, I had the sole charge of the Report on the Heart's Sounds; and conducted the experimental demonstrations in a manner, which seemed to satisfy the Medical Section, which was numerously attended. I recollect that Dr. Copland and Dr. James Johnson, who were present, were particularly delighted at my imitations of all the *bruits* or *murmurs—de soufflet, de rape, de scie, de mouche, de diable, fremissement cataire*, &c., which they had been in the habit of hearing and describing, as occurring in the human body. An attempted popular exposition of the same subject at the General Meeting was not equally successful. The appointed president of the Medical Section did not come; and Dr. Peter Mark Roget asked me to propose him to fill the office, which I did; not without some misgiving, for although he had done good work in his time, and was very long a Secretary of the Royal Society, he was now by no means a man for the occasion. Yet he took it into his head to attempt to make our report the theme of a public address, 'On the discovery of the language of the heart.' So I had to coach him up in the subject, which was no easy matter. As I had to leave before the end of the meeting, I did not witness the result: but my friend, Dr. C. Lingen of Hereford, (whom I met on the top of a coach on his journey home), told me that he was present, and saw Dr. Roget, gesticulating on the platform, with a stethoscope in his hand; but neither he, nor the greater part of the audience, heard a word of what he said. What an utter absurdity in the arrangement of public meetings, to entrust an address to a person who has neither voice to make himself heard, nor capacity to make himself understood!

CHAPTER XVI.

PUBLICATION OF LECTURES, &c. 1838–1839.

Approved by Profession—Not Separately Published, except Parts in Tweedie's Library of Medicine—Publication Established Priority of Author's Descriptions and Diagnosis of Diseases of the Heart, as Compared with those of Dr. Hope—Correction of his Misrepresentations—His Misunderstandings and Hostility—Author Advised to Oppose Him in Election at St. George's Hospital—Medical Staff Support neither Candidate, but as several will Vote for Dr. Hope, Author Retires from Contest—Attempts to get New Arbitration with a View to Reconciliation, Unsuccessful—Expressions of Regret and Good Feelings on Author's Withdrawing from St. George's—Letter of Dr. Chambers. Invention of New Method of Suspending Two-wheeled Carriages to Render them Safe and Easy to Horse and Riders—Success Proved by Construction of Carriage, and Trial and Use during Several Years—An Agreeable and Useful Diversion, but not a Profitable Enterprise.

The chief professional event which marked 1838, was the publication, in the 'London Medical Gazette,' of the Lectures on the Physiology and Diseases of the Chest, which I had delivered in Kinnerton Street; and I have reason to think that nothing that had hitherto occurred in my career, had tended so much to advance my reputation. My previous publications were either not practical in their character, or were chiefly designed for the use of students. But the 'Medical Gazette' had a large circulation among medical practitioners, and it was not long before I received expressions of encouragement and approval from several of authority and eminence. The publishers liberally provided excellent wood engravings of some of my drawings; and when the thirty lectures were all printed they formed an octavo pamphlet of upwards of 200 double-column pages of small type, containing more matter than an ordinary octavo volume of five or six hundred pages. I had only 50 copies struck off for presentation: but it was proposed to me to publish them as a separate

volume. I thought it better, however, to improve and enlarge it by further experience and fuller illustration, so as to make it a more complete work on Diseases of the Chest. *This object I never accomplished*; as soon after I became so fully occupied by Professional duties and practice, that I had not time for the publication of large works. In the meantime, much of the matter of the lectures appeared in the third volume of Tweedie's 'Library of Medicine;' and portions relating to pathology and diagnosis, in the fourth edition of my original work, published in 1840.

But one advantage resulted, and still results to me, in the publication of these lectures in 1838, by establishing the priority of my claim to certain points in the diagnosis and pathology of disease. The most important of these refers to the principles of physical diagnosis in valvular disease of the heart, which I claim to have been the first to discover and make known to the profession. Details must be reserved for a later volume; but as the ground of my claim seems to have been little known, I think that I owe it to myself to give here a brief statement of the facts.[1]

In his original work on 'Diseases of the Heart,' published in 1831, Dr. Hope attempted a diagnosis between different valvular lesions, *by the situation of the murmurs*: that the disease of a particular valve may be known by the murmur being heard best at a spot on the walls of the chest nearest to that valve, and by the murmur being whizzing or deep toned, according to the proximity or remoteness of the valve from the walls of the chest. The same view was continued in his second edition of 1835; although he there modified his opinions regarding the natural sounds, in conformity with the results of my experiments, which he called his own. In my third edition which appeared also in 1835, I proved by experience, as well as in theory, that the true ground of distinction lay, not in the respective position of the valves, (which are really too close together to be discriminated), but *in the different directions in which the sonorous currents spread the*

[1] In evidence of priority, I make no reference to *private* memoranda, or to oral announcements in lectures: my references are all to *published* statements, the date and authenticity of which admit of no question.

sounds, and *in the different manner in which they are transmitted to the walls of the chest*. Thus the aortic murmurs, which I termed obstructive, are best heard, not only over the aortic valves, but also at and above the base of the heart, in the direction of the aorta and great branches. The regurgitant mitral is to be heard, less over the mitral orifice, which lies back, covered with lung, but more below the breast, where beats the apex, which through the tightened cords and fleshy columns, conducts the sound straight from the vibrating orifice. This and other considerations, which it is not necessary to specify further, first established the distinction between basic and apex murmurs, which is now so familiar; and these rules of diagnosis were confirmed and enlarged by observations of cases which I published in the 'Medical Gazette' in March 1836. They were also more fully developed in the lectures of 1836 and 1837, and now published in 1838. It was not until after all this, that in August 1838, in a journal, and in his third edition in 1839, Dr. Hope announced similar views as his own, without even a mention of my previous publications.

It is painful to me to have to record the occurrence of misunderstandings and acts of hostility, which broke up a friendship of long standing, and led to dissensions which must have been distressing to both parties, and which unhappily were never properly set right. Dr. Hope was my senior as a student, and at St. George's Hospital: and so far was I from thinking of competing with him, that on several occasions when I was privately encouraged by some of the medical officers to come forward as candidate for the office of assistant physician, or lecturer, I refused to do so, that I might not interfere with his claims; and the same disposition was publicly declared, when on the occasion of his election to the office of assistant physician, I announced my intention of withdrawing in his favour. Even after the first misunderstanding about the experiments, I assumed no attitude of hostility; and neither in my third edition of 1835, nor in the lectures published in 1838, were there any expressions, beyond those of fair and temperate criticism. It was quite otherwise with the language and spirit of Dr. Hope's third edition, published in 1839. Not only did the unqualified manner in which

he excluded me from the experiments, imply an imputation of fraud and untruthfulness on my part; but the bitterness with which he cavilled at and attacked almost every statement, disclosed an animosity, which seemed implacable, whilst his misrepresentations were such as to render further argument hopeless.

In this state of things, the resignation of Dr. Chambers caused a vacancy in the office of physician to St. George's Hospital, and I was urged by many friends to offer myself for the office in opposition to Dr. Hope, who was already assistant Physician. This was a strong measure, and one warranted only by unusual circumstances. Dr. Hope was a very accomplished man, and of undoubtedly high abilities; but he carried his pretensions so high as to render himself unpopular with many. Without discussing the grounds of this unpopularity, this, together with his recent conduct towards me, determined many of the influential governors of the hospital to offer me their support, and among these were all the visiting apothecaries and two of the surgeons of the hospital. The medical staff, as a body, decided not to support either candidate; which seemed to imply that they would leave the field open for each competitor to fight his own battle. And so the canvassing went on for two or three days, and I had a large promise of votes. But we soon found that we were hardly warranted in persevering in the course which we had commenced. Whatever may have been his defects, Dr. Hope's claims, from being already in office, and having creditably performed its duties for a considerable time, were too weighty to be set aside. Most of the medical staff, although they refused to support him in a body, now declared their intention of voting for him. One of them said, 'Dr. Hope has had a slap in the face, and he deserved it: but he is our colleague, and we don't intend to turn him out.' As soon as this feeling became manifest, I immediately retired from the contest, which I should never have begun, had I not been led to suppose that the majority of the staff would support me. From the sequel it appears, that they only made my movement the means of administering a rebuke to a pretentious colleague.

Although this termination of my connection with St.

George's Hospital was a temporary disappointment, I felt that it was to be preferred to either, my being elected, to what might seem an unfair exclusion of my opponent, or to my waiting for another vacancy, whilst he continued in an attitude of open hostility. It had been altogether distressing to be thus thrust into a quarrel with an old friend, at a juncture, as critical to him, as it was to me; and became a matter of more painful regret to myself afterwards, (what I did not know at the time), that he was then suffering from ill health. I must conclude this subject with one more extract from the 'Reply to statements in the Memoir of Dr. Hope' before referred to.

'The only remaining point which requires explanation, is the statement that I declined an arbitration proposed by the Rev. Mr. Niven, chaplain of St. George's Hospital. Now, I can appeal to Mr. Niven,' (and I have his letters) 'in support of my assertion, that up to the summer of 1839, I was most desirous that the difference should be adjusted; for I entertained no feeling of resentment; nor was it on my part, that the alienation had begun. It was not till that summer, that Dr. Hope expressed to Mr. Niven his wish for another arbitration with a view to reconciliation. This was in the midst of the contest for the election, which of course prevented me from entertaining the subject at that time. Shortly afterwards, however, I made many attempts to bring the matter to arbitration; having solicited several eminent men, whose position in the profession would, it was hoped, make their decision final,—to undertake the office; but I could not prevail on them to do so. At last, at the recommendation of Dr. Latham, I applied to the Censors of the College of Physicians, with the proposal that, in their official capacity, they should arbitrate between two members of their College. The Censors' board, after some deliberation, declined to act in the matter. Thus baffled in all my attempts to effect an arbitration, I was in the meantime obliged to defend myself against imputations conveyed by statements in the third edition of Dr. Hope's work, which although published in May, I did not see until August of that year. These statements, both by their matter, and by their tone, destroyed in my mind, all hope of reconciliation, and excited me to publish a reply, the warmth of which I now regret, although I cannot deviate from its substance.

'But I can sincerely affirm, that my resentment was of short duration; and for many months before Dr. Hope's death, I declared to several persons who were aware of the dispute, (some of them

his own relatives), that although I believed he was under misapprehensions with regard to my conduct, I retained no feeling of animosity towards him.

'In conclusion, after reading the 'Memoir,' I can only lament (and in saying this I blame myself) that the bond of peace was not more earnestly sought and openly displayed between those who professed to be followers of Him who is the Prince of Peace.' 1842.

The disappointment of my prospects at St. George's Hospital was not unmixed with signs of encouragement from other quarters. My private practice and professional reputation were increasing more than at any former period; and from opponents as well as supporters in the late contest, I received numerous assurances of the most friendly esteem and appreciation.[1] But what I most missed, was the hospital field of work: for although I had no other footing in the hospital than that of a perpetual pupil, and governor, yet I had the freest access to the wards and post-mortem rooms; and several of the physicians treated me rather as a colleague than as a pupil; so that I could carry on my own observations of the cases, and gain the experience of hospital practice. This I felt bound to give up, as I no longer intended to become a candidate. No

[1] The following genial letter from Dr. Chambers will suffice as a sample.

'Brook Street: June 1839.

'My dear Dr. Williams,—I am indeed grieved to find that you have taken so much to heart your disappointment at St. George's Hospital. No one, I assure you, feels for you more than myself; although I confess I do not view your present failure so gloomily as you do, in looking at your future prospects. Your want of success had, in fact nothing to do with your comparative merits, but was the result of circumstances which neither you nor any of your friends could control. For myself I can only say that I have now been well acquainted with you for many years, and have seen much of you both in private, and at the hospital: and in both characters, I mean as a student and practitioner, I have been struck with your talents and high professional attainments. At the hospital, indeed, with regard to all that concerns *auscultation*, I have been your pupil rather than your instructor. Of your lectures and writings I need not speak, for they are known and appreciated by all medical men. With these impressions on my own mind, (which I am persuaded are very general ones,) I cannot understand how you can for a moment suppose that in retiring from the contest at the hospital you are regarded by any one of those connected with the institution, except as a distinguished Physician, whom, had circumstances permitted it, they would have been proud to accept as their colleague and associate.

, I shall always, I assure you, cordially cherish your regard and esteem, and remain, my dear Dr. Williams, your obliged and faithful friend,

W. F. Chambers.'

doubt I should have felt the loss of my chief occupation much more, if my thoughts had not been diverted with a novel and extra professional object of interest, to which I had been directing attention—in the construction of two-wheeled carriages.

The Hansom cabs had then just been introduced, and commended themselves, above the four-wheelers, by their greater ease and speed; and above gigs, old cabs, and all other two-wheeled carriages, by their greater safety as well as ease; and these advantages have rendered them popular down to the present day. But they are clumsy, heavy machines; most trying to the horse, especially in going up or down hill, when their lumbering shaft-frames tilt up, or bear down on the poor brute, in the way most calculated to embarrass his movements.

By a careful scientific study of the principles, on which two wheeled carriages should be constructed, I arrived at the following conclusions:—

1. The draught of the horse should be as directly as possible from the axle to the shaft, so that the whole force of the horse shall be directed to onward motion, and none lost and misdirected in other ways, as when the horse draws from the carriage or springs, which causes shaking, as well as loss of power.

2. Instead of the springs which bear the carriage being *fixed on* the axle, they ought to *hang from* the axle, by *an attachment which admits of a certain amount* of motion, so limited by stays, as to make the weight of the carriage bear perpendicularly on level ground, but bear down on the shafts in going up hill, and bear up under the shafts, in going down hill. This property of self adjustment of weight depends on the centre of gravity of the carriage being placed *below* the axle, instead of being, as in gigs and other common two wheeled carriages, *above* the axle.

3. The wheels should be large and the axle high; and the nearer the seat of the carriage is to the axle, as the centre of motion, the less will be its motion; in fact, the steadier will it be: but in addition to this steadiness, the seat must be saved from shock or jars of sudden motion or collision, whether from the movements of the horse or from the concussion of

the wheels against hardness and irregularities in the road. This softening or buffing process is effected, not only by the springs, which yield while they resist, but also by *the moveable joints between the axle and the springs*, which break every shock from the horse, or from the wheels, before it can reach either springs or seat. The seat, in short, hangs like a cradle by suspension; comparatively still and free, both from the joltings of the paces of the horse, and from the roughnesses of the road.

These principles, calculated and carried out in diagrams and drawings, I brought to the test of experiment in a coach-builder's yard; and soon became convinced of their correctness and practicability. To work them out further in detail in the construction of a carriage for my own trial and use, was another occupation of interest and amusement; which culminated in its completion in due time; and in a delightful drive, with my wife and two children, in my new 'Underhung' two wheeled carriage to Richmond.

Making allowances for a few imperfections in details of the mechanism, which further experience soon rectified, this new invention was certainly a remarkable success; fulfilling all my expectations as to the ease, safety, and light and fleet traction, to a degree surpassing anything that had been accomplished in a two wheel carriage hitherto. Its ease was compared by my friend Dr. Neil Arnott to sitting in a lounging chair, and this was but little disturbed in trotting over a stony road, or when the horse broke into a gallop; so little did the wheel or horse motions reach the suspended seat. It was impossible to upset it; and even should the horse fall down, the shafts might suffer, but the seat of the carriage could be hardly disturbed from its level: so there was no chance of the rider being ever thrown out. Its inconvenience lay chiefly in the seat being low for driving, and exposing the riders to mud and dust. These were avoided in another carriage, which I had built 40 years later, by having a high driving seat, like that of a Hansom; and by high splash leathers.

Beguiled by this invention fancy, I was next tempted by suggestions of friends to take out a patent; and proceeded to devise other forms of carriages and cars, open and closed, to which the same principle could be applied. I found it quite

applicable to light and heavy carts, with or without springs; and by throwing the weight below, instead of above the axle, likely to lighten, or equalise much, the weight under which the horse has to struggle. The plan seemed especially suited for ambulance carriages, as securing greater ease for the wounded, even on the rugged ground and with the hasty paces of the battle field. And I believe to this day, that the same principles well worked out and utilised, by able hands, and with proper materials, are capable of effecting much good in various ways to both man and beast.

But I was soon reminded by calls to weightier matters, that good and useful as this diversion was in its way, it was not in my line of business; and that there were higher and better objects, to claim the attention and the devotion of the whole mind. The patent was therefore turned over to a solicitor, to make what he could of it, which proved to be, as in the case of nine-tenths of these patents—nothing. The only practical results of my invention were;—the carriage then built for my own use, (which, easy and pleasant as it was for country trips, soon had to be replaced by a brougham suited for my town work and increasing practice); and forty years later, another carriage on the same plan, for my retirement; and although this was defective through having been built of bad materials, yet it has carried me safely, swiftly, and pleasantly, along the roads of Cannes during the last six years. A drawing of a car for heavy loads, constructed on the same plan, which I presented to the *Société Protectrice des Animaux* of Cannes, to supersede the barbarous *charrettes* of this country, lately obtained for me the thanks of the Society, accompanied by a 'Diplôme d'honneur.' So much for my *excursus* on two-wheeled carriages.

CHAPTER XVII.

PROFESSORSHIP OF MEDICINE IN UNIVERSITY COLLEGE. 1839–1840.

Vacancy caused by Resignation of Dr. Elliotson, not yet filled—Considerations respecting the Institution—Author becomes Candidate for the Office, and is Elected—Other Candidates—Dr. James Copland—Dr. Marshall Hall—Dr. Clendinning. Complete Change of Plans and Prospects—Excellent Appointment, but Involving great Labour, and Heavy Responsibility—At the Head of Largest Medical School in London. Retire to Country for Rest and Preparation—Change of Town Residence necessary—Anxiety about Reception at Opening Lecture—Thankfulness for Success. Regular Work at College and Hospital—To be Accomplished only by Resolute Industry, and Giving up all Visiting and Amusements, and even Scientific and Artistic Recreations. Colleagues in College and Hospital. Author Introduces Improvements in Hospital—Copious Illustrations at College Lectures—Large Entry of Pupils—Amount of Fees—Names of Distinguished Students—Private Practice not at first Increased by Connection with College.

Shortly after my retirement from St. George's Hospital, my friend and late pupil, Dr. Richard Roscoe, called to ask me whether I had thought of making application for the Professorship of Medicine at University College? I replied in the negative, adding that the time for making such application had some time expired. Being intimate with some members of the Council of the College, he was able to inform me, that if I had a mind to apply, it was not too late. Profiting by this hint, I lost no time in calling on my friend Professor Sharpey, who confirmed Dr. Roscoe's report, and advised me at once to send in my application.

It is unnecessary to enter into a description of the position and prospects of University College at that time. They had already become established on a firm footing, and begun an enterprising and successful career; especially as regards the Medical School. Founded about a dozen years before, under

the title of University of London, by Lord Brougham and his associates in the twofold cause of full Liberty of Conscience, and active Diffusion of Knowledge; and making its appointments on the sole ground of merit and ability, irrespective of creed, connection or patronage,—the College had attracted a large staff of able professors, who were carrying out their plans of instruction on a scale, and with appliances, which had never been attempted before. The result, with regard to the Medical classes, was even in these few years, the accession of so many students, as to considerably outnumber those of any other school in London. Although this early success had been a good deal disturbed by various dissensions which had occurred, (and were to be expected in a body inspired by liberty and popularity,), yet in the medical profession, there was a strong tide of feeling in favour of the new liberal institution, with already marked confidence in favourite professors.

Although never a keen politician, my convictions and inclinations were always in favour of liberty and reform; and no one who, as I did, so much preferred natural knowledge to classical learning, could fail to sympathise with all efforts to increase and diffuse knowledge, against all oppositions of antique prejudice and ignorance. Devoutly believing in revealed religion, as a reality, above the domain of natural knowledge, I acknowledge its paramount claims on the faith and obedience of man; but I never found reason to believe that its influence is limited to, or much promoted by, enforced attendance on the lifeless forms of gabbled words of a college chapel. But that is a matter of individual opinion: others think differently. I state thus much to show that I held no views opposed to the practice of University College, in teaching secular knowledge apart from any form of religion; and that I admired and approved of the example, which that Institution had already held out, of making that knowledge as extensive and complete as possible.

The election of the Professor was vested in the Council of the College, under the advice of the Senate, consisting of the Professors of the Faculty of Medicine and some from the Faculty of Arts. I was requested to send in testimonials,

with the intimation that a few only would be necessary, as I was already well known to several of the Professors. Those sent, were from Drs. Chambers and Macleod, and Sir B. Brodie, physicians and surgeon to St. George's Hospital, Sir James Clark, and Dr. Neil Arnott.

The resignation of Dr. Elliotson, which occasioned the vacancy, was caused, by his being prohibited by the Council from practising Mesmerism in the Hospital. The story is well known and need not be repeated. But Dr. Elliotson was a favourite with the pupils, some of whom vehemently resented his removal; and made such an uproar when Dr. Copland was appointed to finish the course, that he was unable to proceed with the lectures for several days; and had but a scanty attendance to the last. But he was still a candidate for the chair; and his vast erudition in medical literature, his indomitable industry, and abilities, as manifested in the writing of the most learned Dictionary of Medicine ever compiled, seemed to make up a weighty claim. But what might have been thought the best chance in his favour, turned against him: he was tried; and in the estimate of the students, —hard to please, after losing their favourite,—was found wanting. He was, nevertheless, a kind hearted, as well as a learned man; a most indefatigable writer; and deserved well of his compeers.

Two others of my good friends were also candidates. Dr. Marshall Hall had offered himself; but as I understood, withdrew his application, when I became a candidate. His great eminence and long standing in the profession must have placed his claims far above mine; but, he probably had misgivings that his health would hardly be equal to the arduous duties of the office, in all its details of lecturing and hospital attendance. He always treated me with much courtesy and consideration; and several times consulted me, concerning the health of his son, and at a later period, his own, when he began to suffer from the disease of the œsophagus of which he died a few years after.

Dr. Clendinning was also my excellent friend to whom I became much attached; and I attended him and several members of his family, until his death about ten years after.

There were several other candidates, but I cannot now recollect even their names.

I was not long kept in suspense. The committee of the Senate made a report on the qualifications of the respective candidates, and concluded by a decided recommendation in my favour. This report was adopted by the Senate, and transmitted to the Council, who forthwith appointed me Professor of the Principles and Practice of Medicine, and Professor of Clinical Medicine, and First Physician to the Hospital of University College, London.

This important and welcome appointment made a complete change in all my plans and prospects, and was as encouraging to my hopes and aspirations, as it exceeded my utmost expectations. Had I succeeded at St. George's, I should have been only a junior, in a comparatively small school, and might have had to wait long to enjoy the privileges and profits of lectureship. Here I was to be placed at once at the head of the Hospital staff, and in full exercise of the high office of Professor of Medicine in the largest Medical School in England. Doubtless, the duties were most arduous, and the responsibilities great: and the spirit of one so young and so little practised in teaching, might well quail before so vast and so difficult an undertaking; but success braced me up to the work, and increased my confidence, that the powers, with which God had endowed me, would not fail me in future, any more than they had in the past.

Although thus resolving to make as sure of success as possible by the most assiduous diligence, I could never forget the magnitude of the task before me; and in deprecation of severe criticism, I had much reason to plead for consideration and indulgence on every side. The winter session was to commence on the first of October; and I had only two months to prepare for a course of daily lectures of six months' duration. Much consideration was shown me by the Council, and by my colleagues; and it was arranged that I should not be expected to enter on my duties at the hospital till a week before the commencing session.

My wife and children wanted country air, and it was settled that we should spend six weeks at Southend, and

devote the time to the preparation of the lectures, and the recreation of horse exercise, which was necessary for the improvement of our bodily health.

Although my practice in lectures had been limited, yet with familiar subjects, I found no difficulty in delivering them extemporaneously, with the aid only of short notes. But as I had now to enter on a number of new subjects, with much detail and matters of fact, requiring accuracy and precision, I thought it best to write the lectures, at least for the introductory part of the course, on the Causes of Disease, and the Principles of Medicine. It would give one more confidence of being prepared, to have a few hundreds of pages of manuscript to begin with. And no doubt this is a good method of mastering a subject; not only to read upon it, but to appropriate it by writing it in one's own language. But when I came to read these written lectures, I soon found that they were too concise for oral delivery: the student could not keep pace, with either mind or pen, and I had to intersperse explanatory sentences in a more colloquial style.

Among the changes necessary under altered circumstances, was the removal to a new residence. My increasing family had already raised the want of more room; and the situation of Half Moon Street was too remote from my new sphere of action. Having little time to wait or search, I took a house in Holles Street, Cavendish Square; of sufficient size for our present need; and if the situation was less fashionable, than that of my former residence, it was more central, and conveniently near to the College. The toils of moving house and furnishing at this busy time are too trivial to be mentioned; but they did not lighten the weight of work on us.

But the great subject of anxiety, as the time for opening the session approached, was, whether my appointment, made by the council of the college, would be favourably received by the students. Many of these had been much offended by the measures, which caused the resignation of Dr. Elliotson, and had continued to manifest their hostility by their misbehaviour at the lectures of Dr. Copland, when he was authorised by the Council to complete Dr. Elliotson's unfinished course. It was quite uncertain whether they would be more favourably dis-

posed towards me. However, paragraphs in my favour (without my knowledge) appeared in some of the journals. In my visits to the Hospital, I took the opportunity of talking to the students a few words in a good natured manner; and two of the senior influential students applied for my clinical clerkship. These were good signs; and the Medical Faculty then decided, that I should give the introductory lecture at the opening of the session. I chose for my subject, The Scientific Foundations and Noble Objects of Medicine. I delivered this address before a crowded audience, who received me in a most friendly manner, and encouraged me by unhesitating applause. One passage was especially cheered by a group of students. It was a quotation from the writings of 'one who formerly occupied this chair.' My young friends thought this must be their favourite: it was really Dr. Conolly, his predecessor. But all passed off peaceably, and my 'first appearance' was pronounced 'a success.' My predominant feeling was that I could not be sufficiently thankful to an Over-ruling Providence who had led me by a way that I knew not, and was sustaining me in a position of responsibility and utility.

The éclat of the début passed; then came the steady work; and this made demands on my time and energies more than I ever had before. I had never been idle, nor given to much visiting, or frivolous amusements; rarely indulged in a theatre, or musical entertainments. I did sometimes dine out, and go to a soirée; and particularly enjoyed the lectures at the Royal Institution, and a visit to the Royal Academy, and other picture galleries. But now all these relaxations must be uncompromisingly renounced. All my mind, and no less all my strength, was wanted for *work*—professional—professorial, and hospital *work*.

The daily lecture at the College during the first year was from 5 to 6 P.M. (In following years I was glad to have the earlier hour of from 9 to 10 A.M.) The mornings were occupied with preparations for the lecture, and with receiving private patients, the numbers of which were now considerably increasing. The hour for the visit to the Hospital was two o'clock; and although the patients were not numerous, the visit usually occupied from one to two hours. The physicians

were not required to visit the hospital oftener than three days in the week; but I generally found the need of a daily visit, to thoroughly study the cases, and to explain them to students, who were always ready to follow the physician whenever he made his appearance. And as I came with the name of some skill in physical diagnosis, I had more than my share of this occupation. The short interval of the afternoon before the lecture at five o'clock was taken up with visiting private patients. After the lecture I came back, generally tired enough, to dinner; after which when possible, an hour's nap was very welcome, followed by a cup of tea, which freshened one up for letter-writing or any necessary literary occupation, till midnight. Beyond this hour I made it a rule, as absolute as possible, not to sit up. To these restrictions, and to the regularity of this mode of life, I ascribe it, that I was able to keep my working powers through that session without breaking down. Later, I did break down, and had several trials of bad health; but I feel sure that I should never have fulfilled my duties, or preserved my health, if I had not reserved my strength by entirely giving up visiting and all evening amusements, when the onerous duties of this professorship devolved on me. The labour has been considerably lightened to my successors in the office; no one of whom has attempted to give, as I did, a full course of Lectures on the Principles and Practice of Medicine (150 lectures and examinations), in one session of six months.

Then there were, besides, the Hospital work and clinical lectures. The Hospital Physicians were expected to visit the Hospital three times a week, and to give one clinical lecture. I have already mentioned that I rarely failed to visit the Hospital every day (except Sunday;) nor to give the clinical lecture. In subsequent seasons I often gave two. The need of assistance in this department had been much felt; and some members of the Medical Faculty had advised the appointment of a Special Professor of Clinical Medicine, to supplement the instruction of the present Physicians. Dr. Carswell, the Professor of Pathological Anatomy had already been appointed physician to the hospital with this object; but his appointment at this time to be personal physician of the King of the Belgians, withdrew him from the College. The resident

medical officer, Dr. John Taylor, an old student and a distinguished graduate of the new University of London, had been in the habit of giving clinical demonstrations at his early visit; and with considerable advantage to the students. It was proposed by some members of the Medical Faculty, to create a special professorship of Clinical Medicine, whose duty should be to personally instruct the students in this department. My colleague, Dr. Anthony Todd Thomson, Professor of Materia Medica, was decidedly opposed to this appointment, as infringing on the office pertaining to the other physicians. But reserving to the senior physicians their full titles and offices of Professors of Clinical Medicine, I had no hesitation in supporting the proposition, as I felt fully how much both physicians and students needed this additional help: and through my support, the measure was enacted by the Council. I also fully approved of the appointment to the office of Dr. John Taylor, who had already proved his special fitness for it. At a later period I also similarly acquiesced in the appointment of Dr. Walshe, as Professor of Pathological Anatomy.

But notwithstanding the frankness and amity of my conduct, I was disappointed to find some workings of a leaven of jealousy and ill-feeling mixed up with this affair, as if the interests of the new objects could not be forwarded, without disparagement of the existing state of things. With all my devotion to my work, I was quite conscious of shortcomings and failures; but still hoped these would diminish with increasing experience and confidence. From the majority of the students, I received hearty encouragement; and it was surprising as well as delightful to me, at the weekly examinations, to find how well they mastered what I had taught them. But there are in most communities some individuals more difficult, less docile, and more discontented; who perhaps would do harm only to themselves, if they did not find older ears eager for evil report and rejoicing in it. However, with the friendly countenance of the great majority of the professors and students, I could afford to disregard little manifestations of unpleasant feeling which sometimes occurred. Dr. Sharpey and Professor Graham were my oldest and firmest friends;

and I was soon on friendly terms with Dr. A. T. Thomson, Samuel Cooper, Professor of Surgery, Robert Liston, Professor of Clinical Surgery, Dr. D. Davies, Professor of Obstetrics, and Mr. R. Quain, Professor of Anatomy. Of the Faculty of Arts, Professor Maldon (Greek), Professor T. H. Key (Latin), and Professor De Morgan (Mathematics), often joined our meetings. With the Rev. Dr. Hoppus, Professor of Logic, I became intimate through my professional attendance on members of his family; and through our accordance in essentials in religious faith; although he was an Independent, and I an English Churchman. These and others of the Professors used to meet at intervals at each other's houses for harmonious and social converse; but my heavy engagements prevented my frequent presence.

I succeeded in introducing several changes in the Hospital, and especially in the clinical and post-mortem departments. At the head of each bed, was a card with the patient's name, disease, and the prescriptions for the treatment, for inspection by the students; instead of having to refer to the books, which had before been the case. This practice has since become general everywhere; as has that of having glasses for exhibiting and testing the secretions, with thermometers and hydrometers, at hand, &c., which had never been done in this Hospital. But where a change was most wanted, was in the place for examinations *post mortem*. This was nothing more than a shed, with a wooden shelf, open to the weather, and hardly screened; without table or water supply. Such a state of things would have been disgraceful anywhere; but what for an Institution, which prided itself on having first established a professorship of Pathological Anatomy! They told me that inspections of importance were made in the surgical operating theatre — much to Mr. Liston's disgust and indignation. Without loss of time, I employed a builder to inspect the premises, and made a plan for building a proper theatre, with iron railings on steps overlooking a central table covered with zinc; and with proper water appliances and drainage. This plan with estimate, I sent to the Hospital Committee, with a letter, offering to make a donation of Fifty Pounds to the Funds of the Hospital, if they would consent to the adoption

of the plan; which would cost little more than double that sum. My proposal was at once adopted; and thereafter the examinations, to which I had always attached the utmost importance, were carried on in a decent and instructive manner.

For the illustration of my lectures at the College, on the Principles and Practice of Medicine, I had not only my own drawings, diagrams, and tables, but also the valuable collection of pathological drawings, executed by Dr. (afterwards Sir Robert) Carswell, similar to those with which he had supplied Professor Thomson of Edinburgh for his lectures already referred to. I had also a complete set of Cruveilhier's Pathological plates (presented to me by my old friend and fellow-collegian Dr. F. Leighton, whose family I professionally attended). I had further the use of a valuable series of life-size stencillings of the position and condition of organs in disease, by my friend, Mr. Francis Sibson, then resident in the Nottingham Hospital. These tracings were made according to the suggestions of my friend, Dr. Thomas Hodgkin. (Dr. Sibson's eminent career afterwards is well known: cut short as it was by early death from aneurism). I spared neither time nor pains in using these illustrations to the utmost; and if my lectures had any amount of success, I consider that they owed much to those objective demonstrations, which engage and exercise the senses as well as the understanding.

The disturbances which had occurred in the business of the College, in connection with Dr. Elliotson's removal and other matters during the last two years, caused some anxiety among its friends, lest the success of the Institution should suffer in consequence; but these apprehensions were happily removed by the advent of the full number of students; so that the College retained its position at the head of the Medical Schools of London. My class in numbers surpassed all former years; there being no less than 221 students, of which 119 were new entries,—the largest number ever made, before or since. The fees amounted to 764*l.*; from which, deducting one third for the College, left my portion 509*l.* 6*s.* 8*d.* This seemed a handsome salary, and I was thankful for it: but it is by no means high, considering the amount of work to be done, and that nothing more is derived from hospital fees.

In most of the London Hospitals, the money paid by students for attendance on the Medical and Surgical Practice, is all divided among the Physicians and Surgeons; but at the foundation of the hospital in connection with University College, the Professors of the College volunteered to forego their claims, and to surrender the whole sum for the support of the Hospital; because its existence was necessary for the working of the Medical School. King's College and its Hospital were founded soon after; and its Professors, wiser in their generation than those of the University, made claim to two-thirds of the Hospital fees, leaving one-third only to aid to support the Hospital. I confess that I partook of the feeling, general in the Profession, that the King's College Professors were right; and that however generous and disinterested the sacrifice of those of University College might seem, it was hardly equitable that the medical profession should be thought so little worthy of its hire, as to be doubly taxed with gratuitous work, for students, as well as for the sick poor. But the practice had been established, and we had to submit to it; which was less a hardship then, when the school was flourishing, than it has become of late years, when its numbers have been seriously diminished. But I understand that recently these arrangements have been more equitably settled; and that the medical officers now receive a proportion of the fees paid by students for Hospital attendance.

It is pleasant to me to recall the names of some of my first pupils of University College, especially those best known to me by having regularly attended at the weekly examinations of the class. Several, alas! have passed away before their old teacher.

Thomas Patrick Matthew took my first gold medal, earned the first Fellowes prize, and was my clinical clerk, and one of my most diligent and talented pupils. He died early of consumption. J. Deakin Heaton was also a gold medallist, and my clerk and excellent friend. He was covered with honours and distinctions, both at the College and University of London; and after a successful career in his native town, Leeds, died in the prime of life. Edmund Parkes was a most attentive student at my lectures; but did not compete for my medals,

being much engaged with his relative, Dr. Anthony Todd Thomson. He often consulted me before his subsequent brilliant career; and I endeavoured to persuade him to re-edit my 'Principles of Medicine,' which he professed to admire; but he was too fully occupied with his own great work, which has since proved to us how much was lost in his early death. I wish he had adopted my suggestion of the English word *Hygienics*, instead of the French, *Hygiène*.

Among those who survive, and have done credit to their teacher, and whose names are familiar to the profession and to the public, I am happy to mention the following old friends and pupils. Wildman Whitehouse, Charles John Hare, M.D., John James Tweed, John Marshall, F.R.S., P.R.C.S., Edward Sieveking, M.D., Robert James Mann, M.D., W. C. Williamson, M.D., F.R.S., Charles Brodie Sewell, M.D., J. C. Bucknill, M.D., F.R.S., Edward Jeffery, M.D.

Of several other well remembered names, I have no recent information.

It was a subject of much thankfulness, that I was enabled to accomplish the work of that session, and give the full course of lectures and hospital attendance, without any serious interruption. My friends were very doubtful that my health would stand the strain, and considerately forebore their claims on me for private practice, under the supposition that I was already overworked. In the first half-year after my appointment to the College, my private practice actually diminished; and it was not until I had successfully struggled through the work of the session, that I began to derive, in this respect, any advantage from my new connection: then it seemed to come, less from any repute, or prestige attaching to the College, than from the personal influence of the pupils and their friends, who began to judge favourably of one's abilities as a practitioner, as well as of one's success as a lecturer.

CHAPTER XVIII.

LITERARY AND FINANCIAL MATTERS. 1840–1841.

Publication of Clinical Lectures—Fourth Edition of Work on the Chest: Extracts—Also on Diseases of Organs of Respiration in Tweedie's 'Library of Medicine'—Republications in America. Review of Financial Position—Income now Exceeds Expenditure, for First Time after Ten Years' Establishment in London—Reflections—Continuance of Success all Dependent on Continued Health. Researches on 'Contractility of Air-passages'—Successful Results, Useful in Treatment of Asthma, &c. Election to Fellowship of R. College of Physicians—Accepted after some Hesitation—Explained Later. Country Cottage.

During the summer session the Hospital practice and Clinical lectures continued as usual, and some of these were published from time to time in the 'London Medical Gazette,' by the request of the Editor. The termination of the winter lectures at the College, also gave me time to prepare a fourth edition of my work on Diseases of the Chest, which appeared in the autumn of that year, with the following title; '*The Pathology and Diagnosis of Diseases of the Chest, comprising a Rational Exposition of their Physical Signs.*' The following extract from the preface will show the intentions which I entertained at that time, *and have never been able to carry out.*

'More than a year has elapsed since the last edition of this work was out of print. It had been my intention to condense it into a Manual of Diagnosis of Pectoral Diseases, and to arrange in a larger work, on the Nature, Causes, Distinction and Treatment, materials which have been accumulating during many years of experience and study in Diseases of the Chest. But the important and responsible duties of teacher of practical and clinical medicine having engrossed nearly all my time not engaged in practice, I have been obliged to postpone the task, and to complete a fourth edition on the former plan. In its present enlarged form, it may have some-

what outgrown its original object; and I fear it will disappoint equally those who want only to know "how to use the stethoscope," and those who look into books only to find a remedy. But the improving standard of medical education, as well as the favourable reception of former editions, gives me reason to hope that many students and young practitioners will not be content with a mere smattering on the subjects of this work; but will hail in its increased size an extension of the limits of sound knowledge, which when properly mastered and applied, constitutes useful power.

'The extensive additions have rendered necessary some alterations in arrangement, chiefly adopted from my lectures published in the "Medical Gazette," from which also much new matter is taken. I trust the engravings will be found instructive improvements, and that some readers will find help in the new tabular views of signs and symptoms. I have ventured to propose more simple and concise terms to designate the phenomena of auscultation; but aware of the inconvenience of any change in nomenclature, I have generally retained that hitherto employed. The favourable reception of former editions of this work in this and in several foreign countries, confirms me in the conviction that the only fundamental mode of studying *auscultation*, is through a knowledge of those facts and laws in physics and in pathology, of which the phenomena of auscultation are examples. I have not the same confidence in adverting to the rational views which I have given of the *general symptoms*; but I think the time is come when we should at least endeavour to make our improved physiological and pathological knowledge more available in practice; and connect with it in an intelligible order, the multitudinous facts which have been stored up by observation.'

In this year also was published the 'Library of Medicine,' edited by Dr. Tweedie, in which my contributions on Diseases of the Chest occupied the greater part of the third volume, and included *treatment*, which was not given in the separate publication. It contained in a condensed form the principal matter of the lectures, which were never reproduced in this country in a separate form. It was quite otherwise in America. About this time I received a handsome volume of all my lectures on the chest, with notes by Dr. Meredith Clymer, from whom I heard that it had a large sale; and afterwards went through several editions. It was doubtless gratifying to learn that my labours were so much appreciated by that intelligent and enterprising people, who I trust, reaped a proportionate

benefit: but the return to me was only in the form of credit. Publishers and people profited—the author got nothing but *famishing* fame.[1]

But we had reason to thank God that we were no longer in straitened circumstances. For the first time, income began to exceed expenditure. In 1840, in addition to my private income, which was 426*l.* a year, I had from publications, 130*l.*, College fees, 509*l.*, and private fees, 260*l*: total 1325*l.* The ordinary expenditure for that year, excluding extras, was 1125*l.* In the next year (1841), the sum from private fees was nearly doubled; and went on increasing in subsequent years in a very rapid ratio; while expenses also increased, but not in equal proportion.

I leave it to my readers to make their reflections on my history, so far as it goes, as bearing on the prospects offered in the medical profession, in return for investment of money and intellectual labour. From 1820 to 1830, ten years, may be put down generally, as those of education, at an average outlay of 150*l.* a year; (this sum is lowered by the consideration of some gains towards the end of this period). Next we may count ten years of establishment in London, from 1830 to 1840, during which expenses exceeded receipts, at an average of 600*l.* a year. Now, in 1840, through God's goodness, we have reached the third decade, the end of which is yet to be told; but this commencement marks the turn of the balance, when the returns exceed the expenses, and the prospect seems fair for progressive and ample success. But this is all contingent on the life and health of one frail mortal. If he fails, all is lost; and even if spared, much will depend on what measure of health and strength may be granted, to reap the fruits of his labour. My example has been often spoken of as one of early extraordinary success; but the preceding statements will show that it was one at least as much of labour as of luck; and that there could be no undue precocity, after a preparation of twenty years.

[1] A similar empty return resulted from the several large editions of my *Principles of Medicine*, subsequently published in America: but the more recent work on *Consumption*, by myself and my son, was acknowledged by a small pecuniary offering from the publisher, Mr. Henry C. Lea, of Philadelphia.

Although blessed with much bodily and mental activity, I was never robust in health; and although I managed to struggle through them, the labour and anxiety involved in my new duties had told much on my bodily frame. Several of my friends could hardly disguise their conviction that I should have to give them up, or they would be my death. But my own courage failed not. The chief ailments, from which I suffered, were occasional attacks of giddiness, sometimes ending in vomiting; no doubt the result of cerebral exhaustion. They were soon relieved by absolute rest, and were neither accompanied nor followed by pain or mental weakness. In fact the activity of my brain at that time often surprised me, and tempted me at times beyond necessary work.

One investigation in experimental physiology I was tempted to undertake during the summer of 1840; for which I had been engaged by the committee of recommendations of the British Association for the Advancement of Science three years previously,—*On the contractility and sensibility of the Lungs and Air-tubes.* Some of the experiments relating to this subject were performed at University College; and I was assisted by Professor Sharpey, Mr. James Blake,[1] Edmund Parkes, A. Bloomfield, Jos. King, and other pupils. The object is explained in an extract from the report.

'It has long been a subject of controversy, whether the lungs and air-tubes are more than passive in the motions of respiration—if they possess any self-contracting or expanding power, independent of the muscles which affect the capacity of the chest. Different writers, ancient and modern, have maintained opposite opinions. Laennec after Sennert, Bremond, and others, considered that the

[1] Mr. James Blake had distinguished himself by many very ingenious and important researches in experimental physiology and chemistry, especially on the action of salt on blood and tissues. I heard of him afterwards in the United States: but not for many years. *Addendum.* In *Nature* of August 2, 1883, is a letter from 'James Blake, San Francisco, Cal.' correcting a statement of mine in a previous paper on '*Cold and Sun Spots.*' Is this my old friend? Anyhow I can hardly accept his correction. I never stated that the month of March was cold throughout California, but that, as in other southern regions, I had reports of the presence of snow on some of the mountains, where it had never been seen before; and this only in the *second week* in March, when sun-spots were absent, and when Cannes was struck with ntense and unprecedented cold. See *Nature*, April 12 and May 31, 1883.

lungs have both a self-contracting and self-expansive property. Haller, on the other hand, was led by experiments to deny that any independent rhythmical motions, corresponding with movements of respiration, are exhibited by the lungs of animals, and J. Müller has confirmed this negative result. Nay, within the last few years, certain writers in this country and in France, have denied altogether the muscular contractility of any part of the air-tubes. These negations are in opposition to the generally received opinion, derived chiefly from the examinations of Reisseissen, that the circular fibres of the air-tubes, from the trachea to their termination, are muscular. Very few attempts have been made to solve this problem by experiment. Wernier and Wedemeyer succeeded only in exciting partial contractions in the smaller bronchi; but with all their results, J. Müller concludes that, "it is remarkable that there exists at present no direct proof of the contractility of the muscular fibres of the trachea and its branches" (Elem. of Physiology, translated by Baly).'

The experiments are too long to be detailed here: if there is room they may be given in the second volume: but here are the chief general results. They were performed on the lungs and air-passages of recently killed animals, by attaching to the windpipe or bronch, a bent glass tube with coloured liquid (called a manometer); wherein any muscular contraction would cause the liquid to rise in the tube. On passing a galvanic current across, or along, the air-passages of the lungs, the liquid rose distinctly and repeatedly, until the muscular power was exhausted by continued stimulation; after an interval of repose, it could be made to rise again; thus proving beyond doubt the existence of irritable contractility in the bronchial fibres. The experiments were varied in different ways, and proved that the greatest amount of contractility resided in the large and middle-sized bronchi, and less in the smallest and in the trachea. It was found moreover that the contraction of the bronchi could be excited by mechanical and chemical irritation, as well as by galvanism; causing the expulsion of frothy mucus. Irritations, electric, chemical, or mechanical, of the vagi nerves, had little or no effect on the bronchial fibres.

Having thus established the important fact that the air-passages are endowed with muscular contractility, I sought

further to determine what influences would increase and what diminish this property; and so to be led to discover a remedy for spasmodic asthma, which must depend on its excess. In animals killed by pithing, or by the poison of hydrocyanic acid, the contractile power remained in full force: but in those poisoned by belladonna or stramonium, this contractility of the tubes was almost destroyed, giving no signs of movement under galvanism. In animals poisoned by opium and by strychnia, it was impaired, but not destroyed; confirming the fact, well known to the experienced practitioner, that these are inferior to belladonna and stramonium as remedies for the spasm of asthma.

I was unable to be present at the reading and discussion of this Report at the Meeting of the Association at Glasgow: but I heard that it excited much interest, and was highly applauded, as an attempt to improve the practice of medicine by experimental research. The experiments were performed, with only one exception, after the death of the animals; and therefore would not come under the insane denunciations of the anti-vivisectionists. And what was the exceptional half-hour's trial before death of *one dog*, in comparison with the prolonged sufferings of a patient in a bad fit of asthma, which we have in many cases been able to relieve, through the knowledge obtained in this investigation?

In the summer of 1840, I was nominated to the Fellowship of the Royal College of Physicians, an honour which I neither sought nor expected; nor did I accept it without some hesitation. I have before alluded to a movement among the members of the College, (then termed licentiates) with the object of protesting against and resisting the illegal operation of some of its by-laws, which introduced restrictions in the mode of election of its members, not warranted or contemplated in the original or supplementary charters.[1] The subject is

[1] There was an Association of the Licentiates for the purpose of petitioning Parliament on the subject of their grievances. Dr. Holroyd and Dr. James Somerville acted as secretaries: I was present at one full meeting, at which Sir James Clark, Dr. Neil Arnott, Dr. James Copland, Dr. James Johnson, Dr. Anthony Todd Thomson, Dr. George Gregory, and Dr. Charles Holland, took a very decided part.

too wide to be fully explained here; and as some corrections have been made to mitigate the evils complained of, it may be inexpedient to open up the whole controversy; but a few words of explanation will give some notion of how the matter stood at this time.

The charters of the Royal College of Physicians of London incorporate into one body all physicians in London and seven miles round, without making any division or distinction between the members of that body, except in the appointment of a President, four Censors, and eight Elects. But in course of time, this body proceeded to enact by-laws, making between those whom they admitted to their body, a division into Fellows or *Socii*, and Licentiates, or *Permissi*; the former only having the privileges of Fellowship, and the latter being merely authorised to practise. The effect of this enactment was to degrade the Licentiates into an inferior order of physicians, and to monopolise to the Fellows the honours and government of the College. The distinction and exclusion was carried further, by restricting the Fellowship chiefly to graduates of Oxford and Cambridge; and placing those from other universities in the lower order of Licentiates.

These encroachments had caused loud complaints, from time to time, on the part of the Licentiates, and in some instances led to appeals to courts of law; with the general result of judgments, condemning the conduct of the College. For some years past, the College itself had admitted the necessity of abating some of its exclusiveness; and had admitted to the Fellowship several Licentiates of eminence. But this very concession was objected to by the body of Licentiates, as stamping the inferiority of their class by taking out of it the best men; and some of these thus chosen refused to accept the offer. Among these were my friends Sir James Clark and Dr. Neill Arnott; and I had some doubts whether I ought not to follow their example. But on further consideration, I thought that, as these eminent recusants did not seem likely to make any exertions on behalf of the body of Licentiates, among whom they chose to remain, I could better promote the reform of the College, by accepting the Fellowship, and endeavouring to work to that end within the body.

In making known to the Registrar of the College my acceptance of the Fellowship, with full acknowledgment of the personal compliment thus conferred, I intimated my intention to avail myself of my position to endeavour, on a fitting occasion, to bring about a reform of those abuses in the management of the College, against which, with other Licentiates, I had already remonstrated. It so happened, that the President, Sir Henry Halford, was with the Registrar at this interview; and although quite friendly, he was not a little surprised at my presumption. 'Well now!' said he, 'look here, my young friend; we give you the Fellowship—what can you want more?' I abstained from debating the matter then with the courtly President; but within twelve months I gave him an answer in open College.

Dr. Hope was elected to the Fellowship at the same time as myself; and that we two alone should be selected for the honour, gave evidence, that whatever had been our personal disagreements, they had not injured our characters in the estimation of the College.

The holidays of August 1840 were spent at our cottage, Ivy Rock, near Chepstow; where my wife and children had been staying during the summer; and the rest of mind, combined with increased and varied exercise of body, proved most welcome means of refreshment.

CHAPTER XIX.

PREPARATIONS FOR WORK ON 'PRINCIPLES OF MEDICINE.' 1840–1841.

Want of such a Work—Preliminary Investigations on the Circulation of the Blood in Minute Vessels—Microscopic assistance from John Dalrymple and Joseph Toynbee. Author to give Gulstonian Lectures at College of Physicians—This Subject Chosen and Delivered, Illustrated with Diagrams and Drawings—Extracts, with Definitions of Congestion—Determination of Blood—and Inflammation—Original Observations on the Contractility of Blood Vessels and on the Nature of these Three Forms of Hyperæmia, now for the first time demonstrated by experiment—Properties and Nature of White Corpuscles—W. Addison, the Author, Waller, and long after, Cohnheim—Recent References to these Researches—Burdon Sanderson, &c.

The next session, 1840–41, was not less busy, but less strained under severe pressure, than that preceding. Lecturing was becoming easier work; both from increased practice, and from a better arrangement of matter. But I found much need of text-books of reference; especially on the Principles of Medicine, or General Pathology and Therapeutics. There were the 'Cyclopædia' and 'Library,' of Practical Medicine, and Copland's elaborate Dictionary,—all copious enough on special diseases; but for the important subject of General Pathology, and the rational principles of Treatment, we had no work but that of Professor Alison, which, although excellent as far as it went, was too brief for our needs. More therefore was required of the lecturer; and I soon arrived at the conclusion, that I must myself endeavour to supply the want by writing a book on the subject. But the subject itself needed much to clear it up—much thought and consideration, to define and arrange what was already known,—and further investigation, to extend knowledge in important questions still involved in obscurity. Among many topics which I found in confusion in lecturing on them last year was that of the pathology of the small blood-vessels, including the subjects of *congestion*,

determination of blood, and *inflammation*. On each of these I had begun to make regular researches, aided by the microscope; and was soon rewarded by results, which threw much light on the matter. I was able to make diagrams of several of these observations in illustration of my lectures on the subject, which were thus rendered much more intelligible, and the phenomena were more satisfactorily explained.

In microscopical examination, I got considerable assistance from two friends who were zealous observers at that time; and I like to recall their pleasant memories, for they were both taken early from their promising and useful career. John Dalrymple was my next-door neighbour in Holles Street. He was introduced to me by my colleague Liston, on the occasion of the illness of a brother, Donald Dalrymple, whom I attended through a dangerous attack of pneumonia, and who was my warm and faithful friend until his death,—soon after his entry on a successful parliamentary life, as member for Bath. John Dalrymple devoted much attention to diseases of the eye; and was well skilled in the use of the microscope, having a first-rate one of the most modern construction. I had been working away with an old instrument, and with difficulty made out the state of the vessels in the frog's web. But when I saw the same object in my neighbour's microscope, all difficulty vanished; and the elliptical blood-discs, the pale corpuscles, and the variations in calibre of arteries, capillaries, and veins, were as plain as noonday. So I soon got new lenses put in my instrument by Powell and Lealand, and quite enjoyed the increased facilities.

The other friend who aided me in this work, who became afterwards eminent in aural surgery, was Joseph Toynbee. I had known him at St. George's Hospital as a zealous co-operator with me in the inspection-room; and he now delighted me with his fine injections, as objects for the microscope, bearing on the subjects which I had in hand. His enthusiasm in everything tending to the advancement of medical science, together with personal intimacy arising from my attendance on a most promising brother, who died early,—made us fast friends, up to the period of his untimely death,—from experimental inhalation of hydrocyanic acid.

During this winter I was requested by the President of the College of Physicians to deliver the Gulstonian Lectures of that year. To be selected for this office so soon after my election to the Fellowship I took for a compliment; for although only two Fellows were appointed from the Licentiates, there were several other young Fellows, who being graduates of Oxford or Cambridge had been promoted to the Fellowship in that year. Although, with little time at command, I would have preferred to postpone the engagement, I was glad of the opportunity of making known my new researches.

The lectures were delivered in the spring, and were published in the 'Medical Gazette' of the July following, with additional microscopic observations. They embrace topics fundamental to a great department of General Pathology; and expanded into their sundry details and applications, occupy two hundred pages of the last edition of my 'Principles of Medicine.' The more original parts, which in my opinion have been hardly understood by subsequent writers, may find insertion in a second volume; and I shall only briefly notice here one or two points connected with each of these conditions, *congestion* of blood, *determination* of blood, and *inflammation*,—in which I claim originality, having been the first to establish their distinctions by direct observation.

Of the forms of *local hyperæmia* (too much blood in a part), *congestion*, is that *with diminished motion* of the blood: *determination*, is too much blood, *with increased motion: inflammation*, is too much blood, *with its motion partly increased, partly diminished.*

These are *definitions*: that is, brief characteristic designations; (not descriptions.)

Of the physical causes of *congestion*, that from venous obstruction had been sufficiently recognised; but experiment enabled me to demonstrate another, in loss of tone in capillaries and veins, producing their enlargement, without any enlargement, or with diminution, of the supplying arteries: this would fulfil the definition—'too much blood, with diminished motion.'

But what is the physical cause of *determination of blood*—that is, *too much blood with increased motion?* I claim to have been the first to give the true answer, when I pointed to *en-*

largement of the arteries leading to the part—as the direct physical cause of increased afflux of blood to the part. But what is the cause of this enlargement? Physiological experiment negatives the idea of increased action, or active dilatation of the arteries. They have no such properties. Besides the elasticity which resides chiefly in the outer coat, arteries have only the slow contractility of their middle coat, called *tonicity*;[1] and the effect of increased action of this would be to contract the artery, and so to diminish the flow. Therefore, instead of increased action of the arteries, there must be diminished contraction, causing them to enlarge from the *vis à tergo* (heart and blood pressure), and so to become the channels of increased flow—*more blood with more motion.*

'When the web of a frog's foot is gently irritated by an aromatic water, the arteries may be seen through the microscope to become enlarged, and to supply a fuller and more impulsive flow of blood to the capillaries and veins, which then all become enlarged too: the whole vascular plexus, including vessels which before scarcely admitted red corpuscles, then becomes the seat of a largely increased current. This is *determination of blood.*'[2] Afterwards an additional factor in

[1] It is to be regretted that English writers do not adhere to this expressive word *tonicity*, which was in use before I applied and defined it, as a primary physiological element, in the first edition of my *Principles* in 1843. The Germans more recently have introduced the term *tonus*; a word signifying a state, rather than a property.

[2] *Principles of Medicine*, 3rd ed. p. 263, and *London Medical Gazette*, July 16 and 23, 1841. On the differences which I endeavoured to trace between determination and inflammation, I am proud to quote the following passage from the most eminent modern writer on the subject; the only one, Professor Virchow excepted, who has done me anything like justice. 'No experiment can be better adapted to show the complete distinction between determination of blood and inflammatory hyperæmia than that described by Dr. Williams in the Gulstonian Lectures, to which I have already referred. Hunter had shown by his experiment that it is possible for the inflammatory blush to subside, leaving no trace, or the injured part to be flooded with blood, and then return to its original condition. But Hunter's attention was entirely fixed on the blood-vessels, to the action of which he attributed the whole process. For the purpose of separating Hunter's incipient enlargement of the vessels upon the first excitement of inflammation (*Treatise on the Blood, &c.*, p. 279) from the definitive changes which followed it, Dr. Williams most judiciously adopted this method of graduated irritation of the web of the frog's foot, which was at that time the only field of experimental observation. He found that a weak solution of capsicum applied to the web, causes dilatation with acceleration of the movement of the blood (hyperæmia

the process was discovered, when Bernard and Brown Séquard found that this vascular contractility is sustained by the power of the sympathetic nerves; and that injury to these nerves had the same effect on arteries in connection with them, as direct stimulation of small arteries—causing their enlargement, with increased flow.

Inflammation I defined as *too much blood in a part* (local hyperæmia) *with motion partly increased, partly diminished.* On examining, in a frog's web, a spot inflamed by the contact of a particle of capsicum, I saw a large and rapid motion of blood *to* and *around* the spot, (determination)—and too much blood with motion impeded—sometimes arrested,—*in* the part most inflamed: fulfilling the terms of the definition.

But attention to the contents of the blood-vessels revealed further changes *within* them. Where the motion was retarded, were seen numerous *white corpuscles*, some rolling slowly at the margin of the blood stream, others stationary and sticking to the sides of the vessels (capillaries and veins).[1] And this production of white corpuscles, together with their adhesive character, serves to explain the characteristic feature which distinguishes inflammation from determination, and adds—partial obstruction, or diminished motion. In my description of the nature and purpose of these leucocytes (as they have since been termed, and not quite correctly), I came nearer the truth when I called them 'spheroidal granular bodies of

with increase of motion) in arteries and capillaries: but if the solution were strengthened, or the application several times repeated, the quickening soon gave way to slowing and commencing stagnation. (*Princ. of Med.* 3rd ed. pp. 240 and 263). The effect of the weak excitation was transitory, and the observation could be repeated any number of times on the same web. The stronger solution produced permanent damage of the tissue, resulting in inflammatory congestion, exudation, and stasis.' Lumleian Lectures on *Inflammation*, delivered before the Royal College of Physicians. By J. Burdon-Sanderson, M.D., LL.D., F.R.S., &c. *British Medical Journal*, April 1882.

[1] Mr. W. Addison anticipated me in the observation of these stagnant corpuscles, which he described in the *London Medical Gazette* of January of the same year (1841). But I did not consider his observations conclusively applicable to a purely inflammatory process; because he used as an irritant, *salt*, which has a chemical action on the blood, and can itself form granules and corpuscles in the *liquor sanguinis*. The same objection applies to the recent observations of Dr. Thomas, cited by Dr. Burdon-Sanderson in the Lumleian Lectures of 1882. In my observations I was careful to use no *noxa* or irritant, which had any known chemical action on the blood.

gelatinous consistence,' probably formed in the plasma of the liquor sanguinis.[1]

Mr. Addison, and others after him, supposed these bodies to be invested by a delicate membrane. But Mr. Addison was the first to discover (what I did not see) that these bodies penetrate the wall of the vessel to which they adhered, and migrate through it; and this observation was confirmed three years after by Dr. Augustus Waller, who informed me of the fact by letter. But both these observations were forgotten,—amid the prevailing tendency to regard every new growth as cellular,—until rediscovered by Cohnheim many years after. It was a wonderful addition to these discoveries, when the *amœboid* properties of these corpuscles became known, and they were proved to be 'masses of contractile living protoplasm.'[2]

It would be out of place here to dwell longer on this important subject, which of all those comprehended in my after work on the 'Principles of Medicine,' cost me most labour and thought: but whilst I acknowledge the advances which have been made in this department by subsequent writers, (especially the one just quoted), I would venture to suggest that the chemical bearings of the question, have not yet received sufficient attention; and that several suggestions which I have made on them deserve further consideration than they have received; such as the share which oxidation of the protein principle of the protoplasm has, in producing its various forms of albumen, fibrine, lymph, pus, &c.[3]

[1] *Principles of Medicine*, 1843, p. 211.

[2] *On the Process of Inflammation.* By J. Burdon-Sanderson, M.D., F.R.S. Holmes' *System of Surgery*, vol. v.

[3] Among the few who have given me credit for what I have done for the subject of Inflammation, I may name the late Professor of Surgery at Edinburgh, Mr. Miller, in the first edition of his *Surgery*; and Dr. R. Druitt; as mentioned in the following note:—

'37 Hertford Street, W.: April 1, 1872.

'Dear Dr. Williams,—I have just finished a very tedious job, the history of the doctrine and treatment of Inflammation for the new edition of Cooper's *Dictionary of Surgery*. If you should ever meet with the work and dip into it, I hope you will see that I have endeavoured to do justice to your views, which 25 years ago, were 25 years in advance of the time.

'I am, dear Sir,

'yours sincerely.

'C. J. B. Williams, Esq., M.D., &c. 'R. Druitt.'

CHAPTER XX.

REFORM IN THE COLLEGE OF PHYSICIANS. 1840–1841.

Complaints of Licentiates—College Invites Suggestions on the Subject—Terms of Charter not Warranting Distinction of Fellows and Licentiates—Author Proposes to Abolish the Distinction, make all Fellows, and Delegate the Government of the Body to a Council to be Elected by Ballot from the Fellows—Motion Rejected; but brought forward at next Meeting by Drs. Latham and Watson: Opposed by Dr. Chambers and Rejected. Two Letters from the Author on 'State of the Medical Profession and on the Kind of Reform that it Requires,' appeared in the *London Medical Gazette*, Pointing out the Need of Reform in all the Corporate Bodies; and Proposing a Plan for the Reform of the College of Physicians—Warning to the College that if they do not Adopt this or some Similar Plan, the Power would be taken out of their Hands—Prophecy Fulfilled in 1858, by the Formation of the 'General Council of Medical Education and Registration'—Author too Busy to Pursue the Matter further; or to Exert much Influence in the College, which, although making Partial Reforms, is far short of what it ought to be as the Representative Head of the most Learned and Skilled Body in the Profession.

In December 1840 an opportunity occurred of joining in discussions on the subject of reform in the College of Physicians. Petitions had been addressed to both Houses of Parliament in favour of reform in all the medical corporations, urging the necessity of legislative interference in every department. The Licentiates of the College of Physicians complained of the illiberal, unjust—and even illegal manner, in which they were excluded from the privileges of the Fellowship, and were a merely external appendage on sufferance, instead of being a part of the corporation. Under the influence of this pressure, the Council of the College issued an address to the Fellows, inviting their attention to the subjects of complaint, with a view to deliberation as to whether any,—and if any what—changes may be necessary in the by-laws and government of the College.

The original charter of the College of Physicians (10 Hen. VIII. A.D. 1518, with the statutes of 14 and 15, c. 5,

1522–23, 32 c. 40, 1540, Henry VIII.) was published by the College in 1862, and can now be easily referred to: but at that time, I had made myself acquainted with their purport, sufficiently to be convinced that they did not warrant the restrictive and exclusive regulations, which had since been introduced; especially in the establishment of a lower order of Physicians, and in the arrogation to the Fellows, of the exclusive privileges of membership of the body. It appeared to me that the rectification of this abuse of the powers of the College was the most essential step in its reform. To restore it to its original constitution, in one united body, comprehending all well qualified and worthy physicians, and having superintendence over, not only the education of those who are to become physicians, but also the interests and welfare of all its members;—to make it the representative head of the most learned and skilful of the whole profession—and to supply its collective wisdom to the needs of the State—these ought to be the real objects of all attempts at reform. Therefore, instead of trying to patch up a dilapidated structure, by partial and clumsy repairs, I moved a resolution, which should reach to its very foundation, with a view to rebuild it, in the strength and proportions, becoming the high purposes of the edifice. It was to this effect:—

In order to make the College truly to represent the interests, the feelings, the learning, and the influence of the whole body of Physicians, practising in the country, it must admit the *whole* body to privileges of membership:—It is therefore expedient that the distinctions between Fellows and Licentiates should cease; and that the government and acts of the body should be delegated to a Council or Representative Head, consisting of the Office-bearers and a certain number of Fellows or Members, a third of which is to be elected annually by ballot, from the Members of at least five years' standing in the College.

This motion occasioned no small stir in the College. Many were surprised at my audacity; and an impression first seemed prevalent, that it was too revolutionary to be entertained for a moment. I was prepared for this; but I was disappointed to find no support from some Fellows who, when Licentiates, had with me joined in the petition to Parliament for this very

object. The subject was hardly discussed openly; but before the motion was rejected, I remarked a very earnest whispering among some of the senior Fellows; and on the day following, Dr. (since Sir Thomas) Watson called on me to say, that Dr. P. M. Latham and himself had been talking over the subject, with the result of finally approving of my proposition, and resolving to bring it again before the College, as a substantive motion, proceeding from themselves. To this I willingly gave my assent; and at an adjourned meeting, Dr. Latham moved a resolution, to make the Fellows and Licentiates one body, and to vest the government of the College in a representative Council, to be chosen therefrom. The motion was seconded by Dr. Watson, and supported by Dr. Roots and a few of the more liberal of the senior Fellows; but was strongly opposed by my friend Dr. W. F. Chambers; who argued against it, not so much on the ground of its merits, or on the changes which it would effect in the College, and in the profession, as on that of the surrender of the privileges of the Fellows, which it would involve, and the yielding to the attacks of their worst enemies. This argument swayed the majority of the Fellows, many of whom were Oxford and Cambridge graduates, glorying in their privileges, which we considered usurped, and disregarding the great purposes for which the College was founded, and of which the growing wants of the profession and of the public, were hourly declaring the need.

The failure of this movement was very injurious to the popularity of the College, and marked the loss of an opportunity in which the liberal spirit of its most enlightened Fellows might have led the way to that summit of power in the State, which the head of the most learned body in the profession ought to occupy, and which now was likely to be assumed by some *new institution*. I did not omit a few words of warning to this effect, in my reply to Dr. Chambers, who had referred to me, as the original author of the motion. On subsequent occasions I had to repeat this warning; but with little effect, until 1858, when the *new institution was established*, in form of 'The General Council of Medical Education and Registration of the United Kingdom.'

I did not limit myself to the College of Physicians, in my

views on Medical Reform. The cry was loud for reform in the other corporate bodies, and in the whole of the profession; and in the autumn of that year I addressed two letters on the subject to the 'London Medical Gazette,' which I reprint, as an outcome of the history of the time, and suggestive of thoughts of what might have been the course of events, had some such plans been adopted.

On the State of the Medical Profession, and on the kind of Reform that it requires.

To the editor of the 'Medical Gazette.'

Sir,—It has never been my disposition to meddle with medical politics; but recent occurrences, and especially a circular issued in November last by the Royal College of Physicians, inviting its Fellows to communicate their views with regard to changes in its constitution, have led me to reflect much, on the state of the medical profession, and on the best means of improving it. These reflections, and the examination of many facts connected with the subject, have produced in my mind convictions too strong to permit me to remain inactive in the cause of medical reform.

But although I thus declare in favour of reform, I must claim the title of a *conservative* reformer. For reasons too numerous to be stated here, it seems to me both just and expedient that the government of the profession should be vested in the three existing corporate bodies; but it is equally just and needful that these bodies should be so constituted as faithfully to represent, as well as to govern, the interests of their respective members.

Nothing less than an honest conviction, that, in the College of Physicians, such a change is absolutely required by the state of the profession, would have induced me, the junior fellow, to move in the College the following resolution:—

'In order to make the College truly to represent the interests, the feelings, the learning, and the influence, of the whole body of physicians practising in this country, it must admit the whole body to privileges of membership. It is therefore expedient that the distinctions between fellows and licentiates should cease; and that the government and acts of the College be delegated to a Council or representative head, consisting of the office-bearers and a certain number of fellows or members; a third of which is to be elected annually, by ballot of all the members, from those of at least five years' standing in the College.'

That the College would at once receive such a proposition, now for the first time made, was scarcely to be anticipated; but I had reason to expect that it would be supported by those, who, out of the College, had, with myself, petitioned Parliament against distinctions, which this resolution proposed to remove. In this expectation I was disappointed.

The failure of this, and of a similar motion afterwards brought forward by two of the most distinguished fellows of the College, does not make the case desperate. The measures, that have been carried, are more liberal than those proposed before the rejected motions; and I would still hope that the most influential opponents of the latter will give way on a mature consideration of the arguments in favour of a reform, that would be conservative by being complete; that would preserve the College, not for itself only, but for the good of the whole profession.

This hope induces me to address you on the subject; and I am the more confirmed in doing this, in consequence of some remarks contained in a recent editorial article (July 16, p. 662), which prove to me that the propositions in question are not fully known to you.

This reform cannot be effective or final, if the good of all its subjects be not fully regarded, as its most important aim. To the medical community this principle is the more necessary, because that community depends solely on itself, being unguarded, and scarcely cared for, by the legislature, and by the government.

The position which the medical profession holds, in the constitution of the country, is quite anomalous. Unlike other professions, it is excluded equally from all branches of the government. The clergy are represented in the upper house of parliament. The professions of the law, the army, and the navy, not only have many representatives in both the legislative assemblies, but they are also sure to hold many influential places in the administrative and executive branches of the government. The interests of trade and commerce are guarded by special government offices, and by representatives, expressly returned for the purpose, by numerous co-operating constituencies. The medical profession alone is unrepresented: without government and without protection, it is a civil cypher;—a nonenity in the state!

Does our profession suffer in consequence? Look for answer to the oppressive treatment which medical men experience from poor-law unions, vestry boards, government offices, the governors of hospitals and dispensaries, from scientific bodies, and too often from the public at large. What educated man is so hardly worked and so ill requited as the medical man? Take another illustration.

Is a measure, seriously affecting the interests of the medical profession, brought before the House of Commons?—either the house is 'counted out,' or the members by their remarks evince their ignorance or their carelessness about the matter. Some two or three honourable members have indeed deigned to patronise medical questions: but of these, one denies to the members of a learned profession, the right or the capacity to judge what is best for themselves; another is turned by every voice, and is ready to follow the noisiest, or the last, complainant: another, formerly himself in the profession, is now too much engaged with the interests of a populous constituency, and other matters, to give much attention to those of medicine.

Powerless as the profession is in its civil relations, its members yet have an extensive influence: but it is the moral and social influence which must accrue to those essential to the well-being of society; it is an influence of individuals only, unlinked by a common purpose and harmonious sentiments: and powerless, because not strengthened by the sympathies and energies of union. The peer and the M.P. highly esteem their physician or surgeon, and would willingly do him a service by supporting his favourite measure in Parliament: but the town doctor and the country doctor, the physician, the surgeon, and the apothecary, have each a different plan; 'and who shall decide when doctors disagree?' So his lordship, and the honourable member, prudently and politely evade the matter.

The lately proposed scheme, of returning to parliament a member to represent the medical profession, is quite chimerical. Where is there to be found an individual, so qualified by ability, knowledge, and integrity of principle—so free from party spirit and personal bias—as to possess the confidence of the bulk of the profession? And if such an individual could be found, what is likely to induce him to undertake the unenviable office? The matters of the medical profession can be fairly debated and adjusted only by a sufficient number of its own members; and to force them before parliament, in a crude and unsettled state, through one or more nominal representatives, would be to mix medical and general politics, in a manner distasteful and injurious to both subjects, and calculated only to give to medical questions the odium of political partisanship.

We are then led to these conclusions:—that the legislature is too ignorant about the state and wants of the profession to be competent, and too apathetic to be willing, to reform it: the profession is at present too much divided in the opinions and influence of its members, either to reform or to govern itself. How obvious is the

principal remedy which these conclusions suggest! *Union* above all things. Union of opinion, by which an acceptable and efficient plan of reform may be devised; and union of influence, by which this plan may be carried through the legislature.

But by what means is this union to be attained amid such discordant elements? An approach to union may be anticipated only through the true principles of incorporation and representation. Let all the members of the profession be incorporated and represented:—not a few only, as in the present corporations, to the exclusion of the many, who are thus not living members, but dead and offensive excrescences:—not in one faculty only, to the confounding of those grades and distinctions which the extent of the art has produced, which experience has sanctioned, and which society requires; but let the existing corporations extend their arms, and open their hearts, and lift up their voices, to receive their deserted and neglected offspring, and affiliate all that should be members; to feel for them, to speak for them, and defend them; let them show a parental feeling for the whole kindred of the profession:—and then shall these bodies become vigorous in their old age, and not more venerable from antiquity and associations, than strong in the united power and affections of their members.

But be it clearly understood, in order to fix the confidence and embody the strength of the profession in the existing corporations, they must fully and fairly adopt the representative principle. The doubts which may be entertained as to the expediency of admitting to the elective franchise the lower classes of society, surely cannot apply to the members of a learned profession. None ought to be excluded from voting for representatives in the councils of their respective bodies; and to form these councils, those only should be elected, who have gained the confidence of the majority of an intelligent and well-educated constituency.

The representative plan has been objected to as likely to diffuse through the profession a spirit of political agitation and discord. How blind the authors of such objections must be, and how low their estimates of the characters of their brethren! The representative plan is one essentially of union, and strikes at the very root of discord. Is there *now* no agitation, no discord? The whole profession is like a troubled sea. Men *will* stir when their rights are unprotected. Men *will* complain when their wants are disregarded. Division *must* ensue where there is no community of feeling or interest. Turbulence and democracy *must* arise where there is no effective government.

A fair representative government will go far to remove these

elements of strife. The real evils, which now degrade, vex, and divide the members of the profession—the oppressions, the collision, the invidious and unjust divisions—will then, in many instances, cease; in others they will be put in train to be lightened or ameliorated. The truly aggrieved, trusting where to find redress, will no longer waste his time and injure his temper in fruitless agitation. The voice of the malcontent and demagogue, if not altogether silenced, will become comparatively powerless and inoffensive.

And when such advantages may reasonably be anticipated from a simple change in the existing corporations, can it be supposed that these bodies will refuse to make the change? Is it possible that a selfish spirit of exclusiveness can so far prevail over a generous desire for the common-weal, as to make them look to themselves, rather than to the profession at large? With the voice of complaint within and without, loudly proclaiming their weakness and inefficiency on the one hand, and their oppressive restrictions and invidious distinctions on the other, is it possible that they will still cling to what they have been, and are—to their own exclusive rights, nominal privileges and antiquated customs—and forget what they may be, and ought to be, in this enlightened age?

I cannot believe it possible. I trust that we shall find in these Colleges, close and exclusive as they have been, a number of liberal and public-spirited men, sufficient to place these bodies in the honourable and useful position which they ought to hold, as the representative heads of the whole profession. This is the argument that should decide them. I would not argue the law of the case. It were frivolous to debate now whether the Colleges have, or have not, acted up to the letter or the spirit of their charter, or whether the Society of Apothecaries have exceeded theirs. Disputes on these points tend to no good, but only excite animosity and widen the breach.

Let us freely admit the good which these bodies have done. For example, the stamp of respectability and literary attainments, which the College of Physicians has conferred on its order; the encouragement given to the study of anatomy by the College of Surgeons; and above all, the benefit conferred on the profession, and on the public, by this body and the Board of Apothecaries, in raising the standard of medical education. It is because they have wrought these good things, that we would expect from them still better things. It is because they have not been idle, although shackled by partial and antiquated by-laws, that we would strike off their fetters, extend their ability, and raise them to a post of honour and of power—that of guardians and representatives of the interests of the whole profession.

Let us freely admit that in conceding the desired changes, those now invested with power will make some sacrifice. But what is public virtue without some private sacrifice? It is because the disinterestedness of the act would ensure the confidence of all parties, that we would desire to see the corporations cheerfully and earnestly engage in the noble work of a thorough self-reform.

And after all, what a shadow is the contemplated sacrifice, in comparison with the substantial good to be achieved. The surrender of certain empty privileges by a few, to the end that justice and protection shall be administered to the many. Nay, in the end, will the sacrifice be real? Will not those who voluntarily give up their exclusive privileges for the common interests of the profession, so entirely deserve and obtain the confidence of that profession and of the government, that to them chiefly will be entrusted the enlarged power and higher honour, of presiding over and protecting the whole medical community? Truly, I believe that they will.

In another letter I propose to develop that plan of reform in the College of Physicians, which, as it appears to me, should be the first step of the great work.—I am, sir, your obedient servant,

CHARLES J. B. WILLIAMS.

7 Holles Street, Cavendish Square: September 17, 1841.

To the Editor of the 'Medical Gazette.'

Sir,—In my former letter I endeavoured to point out the anomalous position of the medical men of this country:—without representation, and without protection of their interests. I argued that it is vain to hope for due attention from the Government, or from Parliament, until medical men themselves shall unite more in their opinions and in their influence; and as the safest and surest mode of engaging the sense and strength of the medical community, without harassing its members with revolutionary measures, it was proposed that new powers from the Government, as well as from the profession, should be vested in the three existing corporate bodies; these being first reformed on the principles of true incorporation, and equal and responsible representation.

Before I proceed to the chief subject of this letter, a specific plan of reform for the College of Physicians, it will be well to state some general features of that applicable to the whole profession.

It seems to me expedient, for the sake of the public as well as of the profession, that, in the contemplated changes, as little violence as possible be done to established usages, where these are

not productive of injurious results. For this reason, rather than because abstractedly it is the best possible division, I would retain the distinction of the three orders of the profession,—physicians, surgeons, and practitioners in medicine, or general practitioners.

The physicians constitute the highest class of the profession, whose special object is the treatment of internal or constitutional diseases. They are to be distinguished, first, by the time devoted to their education, both preliminary and medical, the latter being both academical and practical; secondly, by their having attained the degree of doctor in medicine; thirdly, by the amount of fees to which they are entitled; fourthly, by their not practising pharmacy in any shape.

The surgeons are the highest class, whose special object is the treatment of external diseases, and of those which require manual operations. They should be distinguished by the time expended in their education, which should, in all points, correspond with that of physicians, except that, in their practical studies, surgery should take the prominent part. In the amount of their fees, and in their not practising pharmacy, they should also be on a par with the physicians.

The practitioners in medicine, although inferior to the physicians and surgeons in the time required for their education, and in the amount of their fees, must be sufficiently instructed to qualify them for the treatment of disease, internal and external. Their examining body must be formed in part by physicians and surgeons. They may practise pharmacy, but not as a means of remuneration. They may not hold offices of physicians or surgeons to public institutions. Physicians and surgeons shall be entitled to enter the order of medical practitioners; but in so doing they must give up the titles and privileges of their former rank.

The practice of midwifery may be attached to either order of the profession, after an examination by competent persons in the respective boards of examiners.

The affairs and interests of each order of practitioners are to be entrusted to a representative head or council, a third of which is to be elected annually by the ballot votes of all the members.

The councils of the respective bodies should have the power of entrusting to a committee of conference, consisting of a certain number from each council, matters affecting the different bodies in common. Questions which the committee of conference cannot terminate to the satisfaction of the councils, may be referred to the Secretary of State for the Home Department. This is the only case in which lay interference will be needed, if the corporate bodies

will adopt fully the representative principle. If they refuse to do this, the government of the profession will surely pass into lay hands: and probably the best way in which this may be effected, is by the Government forming a board of public instruction for this and other needed purposes. But this is an alternative which I do not like to contemplate. To return to the College of Physicians.

The great purposes of a college of physicians I conceive to be, not only, first, 'to ensure the best education for those who are to become physicians,' (Circular of the College, November 27, 1840); but also, secondly, to protect the interests of physicians against all circumstances, *within* and *without*, which may injure the moral, intellectual, or civil dignity of their art and profession; and, thirdly, as the representative organ of the most learned and dignified class of medical practitioners, to decide or report on all important questions regarding the public health, or other subjects referred to them by the Government, or by other public authorities.

The following are the outlines of a plan for the reform of the College:—

1. The College is to consist of fellows, a president, council, censors, and other office-bearers, as at present.

2. The order of licentiates is to be abolished.

3. The fellows are to consist of the present fellows and licentiates. To these are now to be added, by an act of grace, without examination, all other regularly educated physicians in England and Wales of three years' standing, on payment of a certain contribution to the College. All of less than three years' standing are to submit to an examination.

4. The council is to consist of the office-bearers, and a certain number of fellows, elected by ballot votes of all the fellows, from those of five years' standing in the College. Of these a third go out annually, at a general meeting of the College. A ballot paper, signed by the registrar, with a list of all the eligible fellows, to be sent to each fellow, who writes on it the names of those for whom he wishes to vote. These papers may be sent by post, sealed for the ballot box.

5. The president is to be elected annually by the fellows, from those who are or have been members of the council. Election as with members of the council.

6. The censors and other office-bearers are to be elected by the council.

7. The government and acts of the College are to be entrusted to the council, which is to have the power to fine, suspend, and expel offending fellows.

8. All in future practising as physicians must become fellows of the College, under penalty of fine.

9. Candidates for the fellowship must have completed their 26th year; and, in addition to an adequate acquaintance with classical and general literature and science, they must have spent at least five years in the study of medicine, and the contributory sciences, at some recognised college or school. In the case of those who have been already ten years in practice, four years of study may suffice.

10. Examinations to be conducted by the censors, *vivâ voce*, and in writing, and to include clinical tests of competency.

This plan, with one or two slight alterations, is that which I submitted to the conference committee of the College in last December; and after having heard many other schemes proposed and debated in the College, I humbly think that this, in simplicity, safety, and sufficiency, excels them all; excepting, however, that subsequently brought forward by Drs. Latham and Watson, which, in no material respect, differs from mine. In further explanation and support of this plan, I will add a few remarks on its several items.

1. This constitution of the College resembles that of other learned societies, and is the only plan on which the privileges of members may be preserved, whilst the offices afford fair means of honourable distinction.

2. The abolition of the degrading distinction of the licentiate, I hold to be essential to the prosperity, nay, the very existence of the College, in the position in which we hope to see it. All that was urged in my former letter against the causes of disunion, is especially applicable to this invidious division in the same order of men. To recognise a man as a physician, and yet to refuse him the full rights and privileges of a member of the body of physicians, is to stultify the recognition, and to stamp him with a mark of inferiority which renders the distinction a perpetual subject of shame and discontent. Even conceding to the licentiates (according to some of the recently proposed schemes), the title of *members*, with the privilege of naming annually for the fellowship a number out of their own order, one half of which number is to be rejected by the fellows, would be but an ungracious half-measure of justice, and one ill calculated to promote that harmony and unity of interest which should subsist between the members of the same body. The same serious objections stand against the plan of limiting the number of fellows, and filling up the vacancies, as they may occur, by election from the licentiates. As long as the number of fellows

is limited (even were it less so than it is proposed to be), so long will there be discontent among the degraded seniors that are excluded; and although a disgrace to be excluded, it would be no peculiar honour to be included in the proposed body of two hundred fellows. It is impossible not to foresee that all such measures which keep up a distinction, to which the majority cannot have access, and over which they can exercise no control, must perpetuate that jealousy and distrust that has hitherto alienated the College from the greater number of the physicians practising in this country. This obnoxious distinction was one of the chief grievances complained of in the petitions of the licentiates to the two Houses of Parliament. I appeal to the present licentiates—do they still desire it to be removed?

3. I propose that all the present licentiates shall be at once raised to the privileges of fellowship; and with the view to incorporate the whole order of regularly educated physicians in this country, it seems proper to admit at this time, without examination, all physicians who have been three years or upwards in practice. Those of a later date could not well object to an examination. (I may state, that the College has already resolved on such an act of grace, by which all regularly educated physicians now in practice shall be at once admitted to the *licentiate*, on the payment of a certain fee.)

4. The order of physicians will still have an aristocracy, and the College will still hold out its distinctions; and they will not be distinctions in name only, impaired by numbers, but honourable offices of trust and usefulness. These honours, being conferred by the suffrages of the whole body, will prove bonds of mutual esteem and confidence, instead of causes of jealousy; and being open to all, they will be incentives to honourable ambition, as the rewards of intellectual merit and moral worth. The only limit which it seems desirable to make, is with regard to age and standing in the College. A trust so important as that of assisting in the councils of the governing body of the profession, requires some experience and knowledge of the profession and of the world. I would propose even a longer noviciate than five years, but that the increased sphere and importance of the operations of the College are likely to develop more business than the senior fellows might have time to transact. The more onerous duties should, therefore, devolve on younger, yet not inexperienced, men; whilst the council would have the advantage of the assistance of the seniors in all matters of importance. The number of the council is a matter for consideration. It is desirable that the number should be sufficient to

perform the work satisfactorily, and without too great a tax on the time of each member; but it should not be so great as to lower the honour or the responsibility of the office. Probably from fifty to sixty would suffice.

The mode of conducting the ballot for the election of the council is proposed after much deliberation, and with deference to those who have advised the voting to be only personal. When we consider the engrossing engagements of medical men, it is too much to expect those resident at a distance, at a sacrifice of time and money, to come to London to vote; and it would not be fair to deprive country physicians of this their best privilege. Fellows residing in London and its vicinity would otherwise enjoy many advantages over their provincial brethren; and I think it but just to preserve, as much as possible, the privileges of the latter.

5. The power of electing to the presidency of the College of Physicians, the highest medical honour which this country can bestow, certainly ought to be placed in the hands of all the members of so highly educated a body.

6. The duties of censors as examiners, require peculiar qualifications; and it appears to me that the members of the council would, better than the fellows at large, be able to select the fittest persons for this important office.

7. It has been generally found that the affairs of societies are most efficiently and satisfactorily managed by a representative council. The busy and engrossing occupation of medical men renders especially desirable for them this plan of entrusting their common interests to a few of their own choosing. These are still responsible for the trust committed to them, having to give a general report of their proceedings at the annual meeting of the fellows. The yearly change of a third of the council also affords to the whole body the opportunity of refreshing their representative head, according to the wishes of the majority.

The council, as the acting body of the College, will have to co-operate for the fulfilment of what, in a former part of this letter, have been described as the three great purposes of the College of Physicians. As these purposes comprehend several classes of subjects, it will be advisable that the council should appoint separate committees: for example, an Education Committee, a Committee of Privilege and Discipline, a Committee for Medical Police, a Pharmacopœia Committee, a Library Committee, &c. Without entering into further details, it must be apparent that the office of a councillor would be no sinecure: the reward would be the honour which it confers; but it seems fair that there should be some

stipend attached to the office, not remunerative, but as an indemnity for time and service.

8. It is quite proper that a reformed College should have jurisdiction over all the physicians of the country; and that the privileges of its members should be protected by law.

9. The subject of medical education is too wide to be considered here; but the outline given is intended to mark the elevated standard of education and mature age required in this highest rank of medical practitioners.

10. My great reason for mentioning the mode of examination is, to draw attention to the clinical test which is proposed for the practical qualifications of the candidates. This should, I think, be the characteristic of the examination by the College of Physicians, and should not be dispensed with even in those cases in which the high character of the academic degree of the candidate might render superfluous further trial on other subjects.

My chief object in addressing you has been to draw the attention of the profession to its present helpless and oppressed condition; and to point out to all, but especially to those engaged in the reform of the three corporate institutions, the need of the largest and most conciliatory measures to ensure union, strength, and justice, to the whole medical community.—I have the honour to be, sir, your obedient servant,

CHARLES J. B. WILLIAMS.

Holles Street, Cavendish Square: September 24, 1841.

It may seem strange, after the expression of such decided and deliberate opinions on the subject of reform of the College of Physicians, that I did not follow it up by continuing to take an active part in the affairs of that body. But in fact, I had not time for it. The duties of the professorship, together with the rapidly increasing engagements of private practice, were too engrossing, to permit of frequent attendance at the tedious deliberations of the College. Even after my resignation of the Professorship, my injured health limited my powers very much to the occupations of a very extensive practice. I suppose it is much the case with other public bodies, that their management falls chiefly into the hands of those who have little else to do, and who make it their business to attend every meeting, take possession of the situation, and by unyielding persistence, eventually succeed in getting everything their own way. The

worst of this is that these busybodies, of small occupation, are apt to be narrow-minded in their views, and look more to personal advantage and privilege, than to high principle and public good. No doubt many changes for the better have taken place since this period, in the state and management of the College of Physicians, and I have not been wanting in my endeavours to promote them: but, to my mind, they have fallen short of what was needed to establish the College on a comprehensive basis of efficiency and general utility, and to satisfy the expectations of the physicians of town and country. The change in title from *Licentiates* to *Members* seems an improvement; but it is more in name than in reality; for the so-called Members have no functions or privileges of the body corporate; election and government being still restricted to Fellows. The election to the Fellowship, instead of being limited to a favoured few, and so made a cause of jealousy and discontent to the members, ought to be liberal and impartial, and extend to all the highly qualified physicians of the Empire. Thus the College might become, what it is intended to be, the representative Head of the most learned and skilful of the Profession.

CHAPTER XXI.

FOUNDATION AND DEVELOPMENT OF THE HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST. 1841.

Originated with Mr. Philip Rose, who Consulted with the Author and Others, and they Formed the Plan and Devised the Means of Establishing this Institution to Relieve those Shut Out from other Hospitals—Author, Convinced of the Need and the Utility of its Establishment, tries to Persuade other Physicians to join in the Movement: but with little Success—Public Meeting in its Favour—Formation of Committee and Appointment of Physicians—The Queen becomes Patron—Support soon Given by the Public, and Especially by the Clergy, who Preached on its Behalf throughout the Land—A Permanent Chaplain Appointed—Assistance from Literary and Artistic Talent—Jenny Lind—Temporary Building. Present Hospital Founded by Prince Albert in 1844—Opened in 1846—Signal Success in its Operation and Results; and Munificent Support in Donations, Subscriptions and Bequests—Description of the Two Buildings of the Present Hospital—Its Multiplied Benefits as a Hospital for the Bodily and Spiritual Good of the Sick, and a School for the Study of Disease—Death of its Founder and Honorary Secretary, Sir Philip Rose, Bart.

It was in this year, 1841, that the first public steps were taken for the establishment of the Hospital for Consumption and Diseases of the Chest. The idea of such an institution originated entirely with a young solicitor, Philip Rose, member of the firm of Baxter, Rose, and Norton; and it was mainly through his zeal, energy, and indefatigable perseverance, that the idea was realised, and the hospital founded; which has now expanded into one of the grandest and most beneficent institutions in the world.

It happened that a clerk in his firm was ill in consumption; and on endeavouring to get him into a hospital, Rose found that consumptive patients were excluded by the rules of most of the London Hospitals, on the general plea of the lingering and incurable nature of the disease. This case of deep individual distress, led him to the discovery of a great

public want. For the sufferers from a disease, which destroys a fifth of the adult population, there was no asylum; and only limited means of out-door relief. His heart felt the greatness of the evil; and his energetic spirit stirred him to the effort of seeking for a remedy. He appealed to some of the medical authorities of his acquaintance; but the only one from whom he could get encouragement, was Mr. Benjamin Travers, the distinguished surgeon.

Mr. Rose was a member of the congregation of the Rev. W. Niven, incumbent of St. Saviour's Church, Chelsea; who was also my particular friend, and late Chaplain at St. George's Hospital. He introduced Mr. Rose to me, for advice on the whole question, and for assistance in its pursuit in prospect of possible benefit. At that time my personal experience with regard to consumptive disease in hospital and in private, was considerable, (although nothing to what it afterwards became); and it had inspired me with more hope than I found to be entertained by standard writers or practitioners; not only as to the palliative powers of medicine, to mitigate and soothe the disease; but also as to the possibility of retarding and arresting it, and in early and limited cases, of even effecting a complete cure. But I did not dare to express this hope so much as I felt it. The strong feeling prevailing in the profession against quackery, and the false hopes which it excites, daunts even the honest witness for truth; and constrains him to speak of his successes, only with bated breath. But here was a great and crying evil, and a bold earnest proposal to try to meet it, or mitigate it; and I did not hesitate to promise my hearty support, and as much personal aid as my already heavy engagements would permit.

So we held many meetings, chiefly at the residence of Mr. Rose in Hans Place; and formed the plan, and defined the objects of the future Hospital for Consumption. Of those who there met, I remember especially the Rev. Wm. Niven, Mr. Otho Hamilton, Mr. John Labouchère, the Rev. Edm. Hollond, Mr. F. Mowatt, Mr. H. Cremer, Dr. Guy, Dr. Robert Dickson, and Messrs. Barnes, Browne and Gardiner, surgeons of the neighbourhood. Dr. Guy was a relative of Mr. Rose, and aided me much in representing the medical relations of our

project: but I felt that the chief responsibility in this respect devolved on myself. I tried my utmost to interest several leading hospital physicians in the movement, (including Drs. Chambers, Latham, Watson, and Bright) but I could not get any to give the support of even their names. Sir James Clark declined for himself; but he recommended Dr. John Forbes to join us; and encouraged us to hope for countenance at Court. In May 1841 a public meeting to support the project was held in Hanover Square Rooms, the Earl of Harewood in the chair; with a pretty full attendance, and fair promise of support. Of medical men who spoke, besides myself, were Sir Charles Scudamore and Dr. Forbes. My public support of the proposed hospital was expressed chiefly on the prospect of its proving the means of great temporal and spiritual good to the patients, and as affording opportunities for studying the disease and improving its treatment, rather than on any avowed hopes of effecting its cure. It was encouraging to find that there was no public expression of disapproval by the press or in the profession; and the committee had to be very circumspect in their proceedings, to keep clear of all imputations of jobbing or quackery. After a while, when the soundness of the undertaking became apparent, from the character of those engaged in it, and the good results of their work, the general approval of the profession, as well as of the public, was not withheld.

Her Most Gracious Majesty the Queen consented to become the Patron during the following year, and evinced warm interest in its success. The Duke of Richmond was President, and several noblemen Vice-Presidents. It is unnecessary to mention here the further steps of the development of the Hospital, which may be seen in the reports. The most important events were, the laying the foundation of the New Hospital at Brompton by His Royal Highness Prince Albert on June 11, 1844, and the opening of the Hospital in June 1846.

It was my intention not to take any permanent office on the hospital staff; but to withdraw as soon as it was fairly established. My reasons were, both because my hands were already sufficiently occupied, and because I wished to avoid all

shadow of self-interested motives in what I had done. When therefore the committee requested me to become consulting physician, I at first refused the office. But a second unanimous request, that I would accept the office, came from the Committee, backed by a letter from Mr. Travers, expressing his opinion that my withdrawal would injure the prospects of the institution. So I became Consulting Physician, which office I have held ever since: although of late years my tenure has been more nominal than real. Dr. Forbes was elected at the same time, and I was very glad of his assistance in drawing up the regulations, and in considering the qualifications of the numerous applicants for office.[1] As the projected institution gained favour with the public, we began to feel the pressure of aristocratic patronage on behalf of favourite nominees, and the Committee of Management had a difficult task to perform. But it is due to Mr. Philip Rose and his friends, to record their unswerving loyalty to the medical staff, to whom they had confided the medical affairs of the infant establishment. Mr. Rose was the son of a medical man, and had married the daughter of a highly respected practitioner at Hastings, Mr. Rankine, whom I knew for years, and attended some members of his family. As Honorary Secretary, Mr. Rose was the leading spirit of the enterprise, and his cordial co-operation with competent and disinterested medical advisers was greatly conducive to its success. Mr. Liston, Professor of Clinical Surgery at University College, was appointed Consulting Surgeon. And for the regular work of the Hospital, Dr. Hamilton Roe and Dr. Walshe were Physicians, and Dr. Theophilus Thompson, Physician to visit out-patients. This staff was increased from time to time as the Hospital became enlarged; and in the list of Physicians and Assistant Physicians since appointed, may be found many well known and eminent names too numerous for insertion here.

The institution from its first foundation to the present time has received the warm support of the clergy; and deservedly so, for established for those among whom there

[1] The Committee of Management afterwards recognised our services by making Sir John Forbes and myself Honorary Members for life with power of voting.

must always be a large mortality, the spiritual wants of the patients call for full and free ministration of the means of Grace; and this has been always an important function of the Hospital. A chaplain, wholly devoted to its work, was one of the earliest appointments; and later, a chapel for public worship, dedicated to St. Luke, was consecrated within the building, at the sole cost of the Rev. Sir Henry Foulis, Bart. for some years chairman of the Committee of Management. Among those who first and most earnestly pleaded the cause of the hospital in various churches, was the Rev. Robert Montgomery, who preached more than thirty sermons on its behalf. He was a powerful preacher, and with a mind full of earnest poetic feeling, which was turned to good account in the pulpit; whatever may have been the faults in his poetry, which brought on him the scathing criticism of Macaulay; too bitter to be unprejudiced. I knew Mr. Montgomery well, and valued his zealous efforts in our good cause. Some years later, my friend, the Rev. Capel Molyneux, was often eloquent in our behalf; and also acted on the Committee, as the Hospital was near his church. I had been so fortunate as to restore to him a daughter, who was pronounced to be in a hopeless state of Consumption; but I believe that the disease was inflammatory; and the patient recovered. Mr. Molyneux's power of riveting his hearers, by the force and beauty of his rapid oratory, was such, that his sermons would last for an hour and more, without the least failure of rapt attention. I used to implore him to have more mercy on himself, if not on his hearers. He said that preaching did not in the least fatigue him, and that he often felt, at the end of his sermon, more fresh than when he began. But some time afterwards, he came to me with intermitting pulse, and other signs of overstrain; and in a few years broke down with disease of the vessels of the brain.

The Rev. W. Harrison was another able preacher, zealous in the cause; with others too numerous to mention. In the forty-second report of the Hospital, which appeared this year 1883, I find a record of 440 church collections having been made on behalf of the Hospital by clergymen of the English Church, including 64 Archbishops and Bishops. The fact

speaks well for the Church and for the Hospital, and is a great proof of their mutual appreciation. The benefits of the Hospital are open to all denominations; and patients are permitted to have the ministrations from their respective churches.

The Institution became an object of much interest among many of the literary and musical world; and several were among its early supporters. The well known and agreeable writers, Mr. and Mrs. S. C. Hall, lived in the neighbourhood; and at their house we (the Committee) met some years later, to present a testimonial to Mlle. Jenny Lind, in acknowledgment of her having given concerts in aid of funds to build a new wing to the Hospital, which was afterwards called by her name. The present was a silver salver with inscription, and engraved above, a view of the building—in finished lines, the completed part, but in airy outlines only, the wanted wing,—to be turned to substantial reality, by the magic power of the voice of the gifted songstress. I remember too, Charles Dickens presiding at a public dinner in aid of the Hospital, and diverting as well as interesting, his hearers in his versatile manner. On that occasion, Dr. Guy made a good speech, in anticipation of recent hygienic movements, warning us of a rife source of Consumption, in the close unhealthy habitations of the poor.

It is unnecessary here to record the several steps of development, which have marked the progress of this Institution during the last forty years, but I have requested my son, Dr. Charles Theodore Williams, one of the Physicians of the Hospital, to insert a brief account of its present state.

'The Hospital has gradually extended its sphere of usefulness, by an increase in the number of wards and of out-patients. Commencing with ninety beds in 1846, it rose to 200 in 1856; and in 1882, on the opening of the new extension building, it reached a total of 331 beds, which are always fully occupied. The medical staff has been correspondingly augmented, and now includes four consulting physicians, a consulting surgeon, six physicians, six assistant-physicians, besides two resident medical officers, and four clinical assistants. The establishment further comprises, the chaplain, the secretary and clerks, the matron and nurses, and other domestics. The building now consists of two magnificent structures, one on either side of the Fulham road, communicating

by a tunnel and a telephone. The old, or parent hospital, stands in a garden of three acres, is built in the Elizabethan style in the form of the letter H, and consists of two wings, each 190 feet deep, running north and south, joined by an intermediate portion, which runs east and west, with a frontage of 200 feet. Behind this hospital is the beautiful chapel, connected with the first floor by a corridor. The building contains a basement, with kitchen, boiler and engine rooms, secretary's office, resident's apartments, and a spacious board-room. Above this is the first floor, devoted to the female galleries and wards; the second floor for males, the arrangements being similar on both floors. In the attic are the nurses' rooms, and above these the ventilating towers.

'The principles of construction are the same in both hospitals, but the new one may be regarded as their further development, by the aid of the most modern appliances. The new extension building, in the Queen Anne style of architecture, consists of a basement, ground floor, and first, second, and third floors; the last three being devoted to the wards, which contain 137 beds. On the ground floor is the out-patient department, and into these lofty and capacious halls with convenient consulting and waiting rooms, and dispensary, —out-patients, to the number of 200 or 300 a day,—flock from far and near, to receive advice and medicine. Last year upwards of 12,000 new cases were seen in this department; and such is the excellence of the ventilation, that the air of the waiting-rooms is as free from smell at the end of the day, as at the beginning, notwithstanding the large attendance, and with no windows open.

'Ascending to the wards, each floor consists of a dining-hall, corridors, wards, nurses' and bath-rooms, and lavatories. The corridors and hall are fitted up with couches, seats, and tables; and here the patients pass most of their time, only sleeping in the wards; unless when confined to bed by a severe attack. The wards contain from one to eight beds each, according to their size; and allow, on an average, of 115 feet floor space, and 1,400 cubic feet per head for each patient. To prevent the smell of cooking from entering the wards, the kitchen is placed at the top of the house; and the food is brought down by hydraulic lifts: a special one on a larger scale is used for patients and nurses.

'The ventilation of the hospital is maintained independently of the windows and fireplaces, and supplies 4,000 cubic feet per hour to each patient; the problem to be solved being, the combination of an abundant supply of air, and the maintenance of a warm and equable temperature (60° Fahr.) night and day. This is done by

the admission of air into the corridors and wards, partly through vertical tubes, and partly through hotwater-coils, the vitiated air being drawn off by flues opening into four towers, containing steam-pipes, which form the exhausting chambers, and are maintained at a temperature 10° F. higher than that of the wards. In accordance with the requirements of modern therapeutics, special rooms are devoted to the application of steam sprays, and inhalations, on each gallery; while the basement contains a complete Turkish bath, including an excellent douche; and also a compressed-air bath, worked by a steam-engine, and expressly adapted for the treatment of pulmonary disease.

'The dietary of the patients is generous and varied as far as possible; and while a garden affords opportunities of exercise out of doors, a bright airy recreation-room is provided within for their amusement. Here, throughout the winter, weekly entertainments of music, readings, conjuring, and dramatic performances, take place, so that the lot of the inmates is rendered as agreeable as possible.

'One of the great objects of the Hospital being to afford a more extended field for medical observation and research than existed previously, the Committee of Management have acted wisely in adding a new pathological department, where, besides the usual records of morbid anatomy being kept, special researches, microscopic and chemical, into the intimate nature and causation of Consumption, are now being systematically carried on.

'This department, in addition to the wards and out-patients, affords a rich store of clinical and pathological observations, valuable for teaching purposes, and with the same object, the medical practice of the hospital has been thrown open to practitioners and students, on payment of a small fee; and lectures and demonstrations are given once a week by the medical staff, the attendance at which steadily increases.

'The development of the hospital is largely due to the spirit of progress and enlightenment influencing the present Committee of Management; and to their cordial endeavours to carry into effect the recommendations of the medical staff: on the continued hearty co-operation of these two, and the support of the public, the future welfare of the hospital will depend.

'In conclusion, it may be safely affirmed that, furnished as the Brompton Hospital is with all the best hygienic and therapeutic appliances, with excellent nursing, and a large and active medical staff, it is not excelled by any institution in the world; and is not

undeserving of the encomium passed on it by the illustrious Professor and Statesman, Virchow of Berlin, when he visited it at the Congress of 1881: "Here *everything* is done for the sick."'

This notice of the Brompton Hospital for Consumption began with recording the name of PHILIP ROSE as its Founder. Its rise and progress, and the wonderful development of its beneficent designs and works, have signalised God's Blessing upon it during the period of forty years, through which, as Honorary Secretary, and efficient supporter, he watched over it, until its completion last year, when in his well-earned dignity as Sir Philip Rose, Baronet, he joined in celebrating its opening. And now we have to mourn his death; and to point to his monument, in this great work, wherein his memory endures,—both in the noble edifice, and in the continual flow of its benefits to suffering humanity.

CHAPTER XXII.

VARIOUS INCIDENTS AND PERSONAL RECOLLECTIONS. 1841–1842.

Journey with Dr. Sharpey to Isle of Wight, and Meeting of British Association at Plymouth—Ivy Rock, Chepstow—Rides to Tintern, Ragland, &c.—Visit to Bishop Coppleston—Conversational Powers—His Friends, Archbishop Whately, and Bishop Phillpott, a Contrast—Mistranslation of Greek in New Testament. Session 1841–42—Lectures becoming easier—Dr. Elliotson's Popularity—Names of attentive Students—Interest felt in Them—Numbers, and Amount of Fees. Professional Friends—Sir James McGrigor—Sir John Webb, his Good Influence at Woolwich—Dr. Scott—Dr. Van Oven—Sir Charles Locock, his Knowledge of Remedies. Attempt to Discontinue Section of Medicine in British Association Counteracted—Visit to Meeting at Manchester. In October 1842 Requested to give the Opening Lecture—Subject, 'Need of Principles in Medicine'—Professor Justus von Liebig present—Extracts from Lecture.

To resume the life narrative of the year 1841. In the holiday of that year, at the end of July, Dr. Sharpey accompanied me in a tour to the Isle of Wight, with a peep at my friends Dr. Martin, and the Rev. Charles Bury (an old patient); and then visiting the British Association (Science), in its meeting at Plymouth, where we were joined by my friend Mr. James Smith of Jordan Hill, whose family I had long attended. As may be supposed from what has been said of the amount of business gone through, I had no paper for the meeting, and there was nothing remarkable to record of the proceedings for that year. We delayed not to adjourn for our remaining holiday to our cottage home at Ivy Rock, near Chepstow: where my wife and family, (now four children) passed the summer. My friend, Sharpey, was much pleased with our scenery and country life. Not equally so with the equestrian excursions, suited to that picturesque country; and after two or three rides, to Tintern, Ragland, &c., in which the Professor did

not succeed in harmonising well with his horse's paces, he gave up his rides, declaring 'I would just rather walk.' More congenial were his visits to the Bishop of Llandaff, Dr. Coppleston, who lived in that neighbourhood. Sharpey was a good *causeur*; and his stories were interesting to those who had not heard them before. The Bishop was like him, and enjoyed both hearing and talking.

But Dr. Coppleston was remarkable for drawing out great talkers. Being also Dean of St. Paul's, he used to ask me to his dinners at the Deanery, with the certainty of meeting interesting guests, among whom, I best remember Archbishop Whately, and the Bishop of Exeter, Dr. Phillpott. They were both famous for monopolising conversation. But the vehement rapid words of the Archbishop, light-complexioned and tall, seemed to bear down the Bishop, who was dark, rather stout, pompous, and deliberate with his sentences. But they both spoke extremely well, and it was profitable to listen to them. A few words which fell from Archbishop Whately on one of these occasions, on a grammatical inaccuracy of the Authorised Version of the New Testament,[1] first interested me in the study of the Greek Testament, which I took up soon after; and it became a daily practice during the latter part of my life.

The Session of 1841–42 was not marked by any stirring incident. The systematic Lectures on Medicine were given every morning from 9 to 10; a more convenient hour; with the refreshment of a walk to and from the College. The routine of Lectures and hospital duties became easier; but not to the extent of giving less occupation. Practice and habit had improved the efficiency of the work, and made it more satisfactory to myself, and I believe to the pupils. I spared no pains in my endeavours to teach them, theoretically and practically, in as plain and pleasant a manner as I could find in my nature; but I had not the gift of jocularity, and made no attempt at artificial wit. My predecessor, Dr. Elliotson, was naturally jocose; and made his lectures amusing, as well as instructive, by the familiar and funny way in which he

[1] The passage is in John v. 40. 'Ye will not come to me that ye might have life.' The literal and correct translation is, *Ye will not to come to me that ye may have life.*

expressed himself. Then he had rendered himself popular in another way, in which I could not follow. He had a large theatrical connection, and used to attend gratuitously dramatic and musical performers. They returned the compliment by sending him free tickets, which he distributed largely in his class, to the great gratification of some among their number. Such would not relish my practice of giving at the beginning of the course, something like a sermon—an address of friendly advice, for the preservation of their health, in body and mind, during their student life. It was well attended by the best of the students, and I hoped gave encouragement, at least to the well disposed.

Among those most marked for regularity of attendance and proficiency during these two sessions, I find the following names. Henry Allen; W. H. Williams; Francis Buckell; Fred. Manning; George Canney; W. L. Adye; John Boulby; Robert Ransom; Alex. J. Lamotte; Alfred B. Garrod; Thomas Holt; John Bury; Alfred Tapson; Philip H. Williams; James Rogers; William L. Grundy; Richard Cammack; Fred. Miles; James Gramshaw; F. J. Brown; William Davies; John W. Davies; Kirkham Burton; G. F. Webb; Henry James Stokes; R. D. Adams; William M. Kelly; Godwin Tims; Wm. John Preston; and Howell Evans. Of these several will be recognised as having since risen to eminence. Some,—I hardly know how many,—have passed away. I hope it will not be unpleasant to the survivors to see their names in this memoir. For my part, I could not but feel an interest in those attentive students, who, day after day, for many months, sat listening to me; and with an intelligence of expression, which betokened communion of thought and feeling. It was much to my regret that I could have so little intercourse with my pupils. The clinical clerks were always invited to my house: but my excessive occupation, and the delicate health of my wife, which occasioned her frequent absence from home, prevented me from showing much hospitality; as the same causes had debarred me also from visiting in society.

In point of numbers there was a considerable diminution; chiefly owing to the afflux on the preceding year, having been increased above the average, in anticipation of new regulations

of the examining boards, thereafter to come into force. My number of new pupils for 1840–41 was 76; Professor's portion of fees 358*l.* 13*s.* 4*d.* For 1841–42, new pupils 86. Fees 378*l.* 13*s.* 4*d.* More than sufficient to make up this deficiency, were the receipts from private practice, which were nearly double those of the preceding year.

In connection with the increase of private practice, I must mention the names of some friends whose good opinion I was so fortunate as to gain. Sir James McGrigor, at the head of the medical department of the Army, sent me a number of patients, and promoted the reading of my works among the medical officers of the Army. Sir John Webb, at the head of the Ordnance Department at Woolwich, was also my good friend; and in seeing patients with him, I had the opportunity of observing the salutary influence of his religious character on the officers of the Artillery and their families. My old College chums, Drs. Prestwood and Henry Lucas, were several years in the Artillery, and always spoke most warmly of their Director-General. My friend, the Rev. Capel Molyneux, was then the popular preacher of Woolwich, and had exercised a benign influence on society there, including the Arsenal. Dr. John Scott was in general practice at Barnes; but having a good Indian connection, he was appointed Examiner to the East Indian Board, after Dr. Chambers. He then moved to Stratton Street, and practised as physician. Having consulted me for his own health, he thought so well of me, as to call me into consultation on every possible occasion, which his Oriental connection rendered not rare. University College, in virtue of its tolerance of all forms of religious belief, has a large Hebrew connection; Sir Isaac Lionel Goldsmid, being its most zealous and beneficent treasurer. Many Jews came to me; and I became an especial favourite of the great Jewish Dr. Van Oven, who in his family, and among his people, found me no end of patients.

But from no one did I get more introductions to practice, and those of the highest class, than from Sir Charles Locock. He was well acquainted with my affair at St. George's Hospital, and judged it right to support Dr. Hope; nevertheless he showed his confidence in me by recommending

me to be consulted in numerous cases, especially those of difficult diagnosis. Locock was one of the ablest practitioners I ever met. Plain and rather dry in address and manner, he was earnest and thorough in his investigation of a case; and by dint of intelligent and persevering trials, had acquired the knowledge of a great number of remedies, which supplied him with a variety of resources, and made him often successful, where every one else had failed. But he was weak in physical diagnosis, and knew it. He had never been properly instructed, and besides, had too much dulness of hearing to permit him to distinguish the weaker sounds. So he availed himself of my help in diagnosis; and always gave me the full credit of it. On my part I often profited by his superior knowledge of remedies; and in obstinate or difficult disorders, not at all confined to his department, when I have resorted to Locock for a new remedy, I have been well satisfied with the success of the result.

During spring '42, I heard of a proposal made in the Council of the British Association for the Advancement of Science, to discontinue the Section of Anatomy and Medicine. It was said not to be well supported; and that the Provincial Medical Association would be the fitter channel for Medical subjects. I immediately wrote to Sir Edward (then Major) Sabine, (who, I think, was General Secretary), urging the rightful claims which Medical Science had to be represented in a Scientific Congress: and from my own knowledge bore witness to the utility and success of the Section in former years. The meeting this year was to be at Manchester; and I moved some of my medical friends there to bestir themselves against this attempt to throw a slight on our profession in their town. I was quite successful. The obstruction came from a superannuated member, inadequately representing Medicine in the Council, and having no zeal himself in the cause, tried to choke the whole concern. Major Sabine replied that the Council were anxious to maintain the completeness of the Association, which depended on all the branches being continued in full activity. So the Section was formed as usual, and was well attended, and maintained its credit; but I do not recollect anything which calls for record here. I was able to be present on one day only; and made a communication on the new

applications of Indian rubber and Guttapercha to Medicine. I was on that occasion the guest of my former pupil, Dr. W. C. Williamson, who has since become famous in Natural History, particularly Geology and Microscopic Palæontology. Two or three years later, I was put on the Council of the British Association; but was too busy to be able to attend its meetings. But the Section was preserved; and has continued to the present day, only with change of name to the more modern and comprehensive term, Biology, including several subsections.[1]

In October 1842 I was again requested to give the opening lecture of the session; and I was not at a loss for a fitting subject; for the preparation of a work on the 'Principles of Medicine' had been occupying all the spare time that I could command. It was then,—On the need of the study of General Pathology as the foundation of Practical Medicine. The theatre was crowded; and there were several foreign visitors, including Professor Justus von Liebig, introduced by his friend, Professor Graham. In conversation with me after the lecture, Professor Liebig expressed his entire concurrence with my views.

The following extracts will serve to show the drift of the lecture. After adverting to the state of medicine as a study and as an art; and to the favour shown to empiricism by the public, the difficulties and unattractiveness of practical medicine are set forth.

In fact, a true pathology, or sound principles of medicine, is the embodiment of the results of experience in disease, with a knowledge of structure and function in health. It is the only connecting link between the preparatory sciences and practical medicine. *Without* it, these are *disjecta membra*; *with* it, they

[1] The following note refers to this change:—

16 Belgrave Square: May 9, 1846.

Dear Sir,—You had left the room yesterday when your name was inserted as a Vice-President of the Physiological Section of the Southampton meeting of the British Association.

Aware as we are of the effective services you formerly rendered to the body, I trust that you will allow your name to appear as a Vice-President; as it is very important on the remodelling of the Section, the names of those most distinguished in Physiological Researches should be connected with it.

Believe me to be,
My dear Sir,
Yours very truly,
Rod. J. Murchison.

To Dr. Williams.

form a connected body of science—young yet, it is true, and falling short of all the objects of the art, but already available for much, and needing only the growth and continued support of its chief members, especially anatomy, physiology, and clinical observation, to become a more perfect and efficient director of practical medicine.

The great proof of the practical utility of general pathology is, the aid which it gives in the study of clinical medicine, and the light which clinical medicine continually throws on it. The states which the practitioner has to treat are often too indefinite, or too mixed, to correspond with any of the definitions of special disease. They frequently consist of functional disorder, varying with time and circumstance, or changing its place, so as to present no fixed characters. But, compared by the pathologist with the standard of health, and analysed from their complexity, their nature becomes intelligible, and their proper treatment obvious, so far as means are possessed to counteract or control that which is wrong. Let us take one out of many examples. The disordered state of health, for treating which Mr. Abernethy gained such a reputation, is one of the commonest ailments we have to prescribe for: some call it, with Abernethy, 'all stomach;' others, 'liver;' others, 'disordered constitution;' others, 'indigestion;' but however differently they may name it, few refuse to treat it, as Abernethy did, by regulated diet, blue pill, and mild saline aperients, repeatedly administered. Now the pathologist analyses the symptoms of such a state, and in the white or yellowish furred tongue, morbid eructations, tender epigastrium, sometimes full right hypochondrium, with extended dulness on percussion, the discoloured fæces, the high-coloured and turbid urine,—he finds proof of congestion and disturbed secretion of the liver and upper part of the alimentary canal; and he recognises in the remedies employed, means which, by increasing the secretions, relieve the congestion; and if these fail, he can suggest other measures, which he knows to be efficacious in removing congestion, and restoring the natural secretions. Again, what confusion in diagnosis, as well as in practice, has arisen from comprehending, under the special name *hysteria*, the most opposite and most varying conditions, merely because they are consorted with some nervous phenomena; so that this word becomes almost synonymous with *female diseases*. But, pathologically considered, the confusion in diagnosis, and, in some measure, the perplexity in regard to treatment, cease. In one group of such cases, the pathologist finds really such signs of disordered *uterine* function as would justify the name; other symptoms, however varied, taking their origin from this disorder: and

he thus discovers the necessity of directing the treatment to this cause. In another group, again, he finds the uterine function impaired; but this only in common with other functions: and all this in consequence of a *want of blood* throughout the body, which want is denoted by the waxy complexion, the pallid lips and gums, the loose yet easily quickened pulse, the panting breath, the feeble limbs, &c. Here the restoration of the blood is the obvious indication; and in proportion as this is effected, the symptoms of nervousness, debility, and loss of function, disappear. In a third group of cases, called hysterical, the pathologist discovers the opposite condition, that of *sanguineous plethora*, which, independently of any disorder of the uterus, causes trouble, sometimes in one part, sometimes in another, but especially in the nervous system, which, in most females, is peculiarly liable to disorder. Here, too, he is led to the most appropriate treatment.

This is but one instance out of many that might be adduced to show the great practical utility of a good knowledge of pathology. In fact, the leading rules of practice, those which guide the most experienced men, (although many are not aware of it, and would not acknowledge it,) *are* founded on general views of diseased function and structure—that is, *general pathology*. You will not find that practical men treat a disease merely according to its name, or according to the nature of the local mischief. Inflammation is not always to be combated by bloodletting, nor hæmorrhage by styptics. The condition of the system—that is, of the functions, is to be taken into account; and the variations of this condition, the states of sthenia and asthenia, tone and debility, excitement and depression, plethora and anæmia, are the very subjects which general pathology explains and shows how to treat.

I say, practitioners *do* act more on general ideas of disease, than on their knowledge of particular diseases. They feel the pulse and the skin, to guide them in the use of bloodletting, whether they have found out the special disease or not. They examine the tongue, and inquire as to the state of the evacuations, to guide them in the use of purgatives, under whatever complaint the patient labours. They consider the complexion and bodily strength in connexion with dietetic measures; and the chief treatment of convalescence depends on rules suggested by general pathological knowledge.

There are other very important departments of medicine which are comprehended in general pathology, and with it have been too much neglected—I mean, the study of the causes of disease, and their modes of operating on the living body, (*etiology*,) and the

means by which they may be avoided or counteracted, including *prophylaxis*, or the prevention of disease; and *hygienics*, preservation of health. Neither of these subjects can be satisfactorily comprehended without a sufficient knowledge of the elements and laws of disease.

Is it not, therefore, most important that these general views, which are so practical and so extensive in their application, should be well founded and carefully studied? Is it right that the leading doctrines of disease, leading not in theory only, but in practice, should, as hitherto, be left to be picked up irregularly, from casual retrospects of study or experience, when they may be learned as the very groundwork of practical knowledge?

What, then, is this general pathology, which we extol so much as the proper foundation of practical medicine? Let us first state what it is not. It is not a collection of hypotheses hung on solitary facts, and ingeniously devised to explain this or that symptom, or the *modus operandi* of this or that remedy. It is not anything floating on (I cannot say, founded on) conjectural notions in anatomy and physiology, such as the existence and circulation of a nervous fluid, the presiding influence of the ganglionic system, or the vital attractions and repulsions of the circulating fluids; notions which, however they may hereafter be substantiated, are at present too speculative to form a foundation for pathology. Nor is it a partial set of opinions, erected on *one* only of the many pediments of fact on which the science of medicine should stand. Healthy anatomy, physiology, physics, chemistry, the study of clinical medicine, that of materia medica, morbid anatomy—neither of these *alone* can furnish a foundation for pathology—that foundation must be formed by ALL—the facts which ALL supply, constitute the material of which it is built, and the general facts or laws of ALL must be brought to bear on the arrangement of these materials, in the construction of a system of pathology.

Some advancement in these contributory departments is necessary before the work can be begun, and it is because they *have* advanced, that the opportunity is afforded. Why should the science of medicine remain in a state of powerless infancy, when its members are progressively acquiring strength and maturity? Why should the art of medicine still be groping about in blind empiricism, and an unintelligible confusion of facts, when science even now can afford it the beginnings of light and of order?

I have just said that the contributory sciences are sufficiently advanced to be generally applicable to practical medicine. The proofs of this in detail, will, I trust, appear in the progress of the

course; but I will adduce here a few examples of a prominent kind. Disease, in so far as it is the result of *mechanical* change, or in part made up of mechanical elements, may be properly treated by *mechanical* means. It was the knowledge of this fact which led Dr. Arnott to invent that admirable contrivance, the water-bed, by which disease is often prevented and removed; and he has lately made another application of physical science, in modes of applying pressure to parts with such equality as to control to any degree the circulation of the blood through them, and thus to relieve pain, remove congestion, subdue inflammation, heal ulcers, disperse swellings, and arrest the growth, if not to effect the removal, of tumours and other morbid productions. Disease, so far as it is physical in its nature and in its effects, is to be investigated by physical means. Hence the advantage of acoustic science in assisting us in diagnosis of internal disease, and of optical science in enabling us to witness the minutiæ of its operations and its products. I need scarcely add, that the treatment of disease is in some instances founded on, and in most cases guided by, knowledge thus obtained.

As an example of improvements in *anatomy* and *physiology* bearing on practical medicine, I may mention the late researches on the nervous system, and especially those of Dr. Hall. By these, much that before was unintelligible in diseases of the nervous system has been satisfactorily explained, and their diagnosis and treatment have received proportionate aid. Considerable light has been thrown on diseases of the liver and of the heart, by recent anatomical and physiological investigations of these organs.

The aids afforded by *chemistry* to the materia medica have been long acknowledged, and continue to increase; but chemistry is growing in importance in its applications to every department of practical medicine. It is now directly useful in the diagnosis and treatment of diseases of the urinary organs. It furnishes a key to the most important rules of diet, in health as well as in disease, and bids fair to supply much that is wanting in explanation of the origin of many maladies, and the most direct mode of preventing them. It is through the aid of organic chemistry, now far advanced—advanced, too, mainly by the labours and genius of an illustrious chemist, who this day honours us with his presence (Professor Liebig)—that we may hope that experimental physiologists and clinical observers will be enabled to solve some of the dark problems of the operation of medicines; a subject replete with practical importance, yet one that still lies chiefly in the region of conjecture.

It will not be disputed that *clinical observation* has lately done much for the advancement of the science of medicine; and this, not only because it is the test by which the contributions of other branches are tried, but also because in itself it is carried on with the minuteness and precision which are essential to science. This precision must apply, not only to the modes of calculating facts, but also and most particularly to the correct determination and classification of these facts. The accuracy of counting is a mere facility in common arithmetic. The accuracy of observing and arranging the facts to be counted, is the higher and rarer quality. Both are required in the prosecution of clinical research.

The whole department of practical medicine teems with examples of the benefits which it has derived from *morbid anatomy*. What should we know of the nature, products, and tendencies of inflammations, and other diseases which alter the structures, but for the scalpel revealing them to our very sight and touch? The minuteness with which it (morbid anatomy) has been pursued in connection with clinical observation, in regard to diseases of the lungs, heart, liver, kidneys, and alimentary canal, deserves especially to be mentioned, as the great source of our improved theory and practice in these complaints.

It is not a general or superficial knowledge of any of these fundamental sciences that will avail to make them profitable to medicine. It is where their facts and laws have been carefully studied, in relation to the living body, that the advantage has become practical; and this study has in many instances developed new phenomena, which reflect light also on the contributory science. The application of hearing to the distinction of diseases has given rise to a more intimate knowledge of acoustic science. Some of the most interesting facts and laws of organic chemistry have resulted from researches instituted with reference to the investigation of disease; as, for example, those of Prout, Wohler, and Liebig. In regard to anatomy and physiology, the instances are abundant. For example, the researches of Charles Bell, Foville, and M. Hall, on the nervous system, were conducted with express reference to it, and were often suggested by the knowledge previously possessed of these diseases. In this respect they followed John Hunter, who throughout his anatomical labours had an eye to pathology, and by observing disease, was continually guided to objects for these labours.

Do not suppose, because I insist strongly on general pathology being the proper basis of practical medicine, that this will lead us to

neglect the superstructure, *special pathology*. Individual diseases will be the chief subjects of the course, occupying 100 out of 150 lectures; and I trust that their details will become much more comprehensible by the arrangement into which general pathology will enable us to distribute them. It is because I feel the vast importance and extent of our knowledge of individual disease, that I would endeavour to introduce you to it from the most advantageous and commanding position; and that position is afforded by a previous acquaintance with the general features of disease. In fact, individual diseases are like the leaves and boughs of the tree, of which general pathology constitutes the trunk and great branches—all preserving an identity and connexion, yet each portion having peculiarities of character which require separate study. Or medicine may be compared to a great edifice, the foundation and chief entrances of which represent pathology, which generally give the proper approach to the separate rooms, special diseases. To some of these, in the imperfect state of the structure, there may be access only by the dark back ways of blind experience, which then must not be neglected; but this is no reason for continuing to make these *dark back* ways the only entrance.

Throughout our examination of the details of disease, we shall find the principles of general pathology continually exemplified; and through these principles the mind can master the details, to an extent wholly unattainable by those who pursue them as unconnected matters of fact. Those who begin the study of practical medicine by attempting to learn the details of diseases, are like those who would endeavour to master all the facts of chemistry, without any knowledge of the general facts or laws of chemical action, affinity, and definite proportions; yet even in practical chemistry, or chemistry applied to the arts and manufactures, the most extensive and important services have been obtained from these very principles, applied to the details.

The purpose of lectures on the practice of medicine is not merely to convey knowledge of disease and its treatment, but also to direct the mind in the ways of using this knowledge, and of acquiring more. Books will supply details which cannot be given in the lectures; but the more important additional source of information is *clinical instruction*. This is an essential part of the teaching of practical medicine. It is its demonstrative part, and is essential, not only because, like other witnessed phenomena, it appeals to the senses, but also because it is necessary to practise those senses in the examination of the signs of disease, and to

exercise the reasoning powers in the interpretation of those signs, and in the further application of previously acquired knowledge. As general pathology is the connecting link between the preparatory studies and practical medicine, so clinical instruction is the step between the knowledge of medicine and the personal application of that knowledge in actual practice. I need not say that each of these is most necessary to the formation of a good practitioner: but there are especial reasons why clinical study, connected with the practice of medicine, is more indispensable now than it ever was. In former days, medicine was little more than a matter of routine; and the examination of a patient was summed up in feeling the pulse, looking at the tongue, and asking a few questions as to the feelings and functions, and this was often done for the sake more of form than of information; for the pills and draughts were much the same in most cases. This was little better than quackery, and required no great preparatory study. That it sometimes succeeded to win the favour of the public, is not surprising, seeing that quackery often had a similar or greater success. Then the ignorant practitioner could disguise his emptiness by a cloak of mystery, and a solemnity of manner, and could command confidence by dropping a hint about his experience, tact, and intuitive perception of disease. But, ignorant as people still are in medical matters, they are not so dull as to be deceived by these means. They have a smattering of physiology and the use of remedies, and they are become troublesomely inquisitive; and if they are taken in, it is by the clever quack, who is ready with his theories and persuasive proportion of cures, and not by the unsatisfactory regular, who examines but little, and cannot explain his views or his practice. In short, the public look for what they have a right to expect, thoroughly educated practitioners, who prove their qualifications by their careful method of investigating disease, the clearness with which they give their opinions, and the general correctness of those opinions.

This, then, is another reason for thoroughly availing yourselves of practical instruction, especially in the clinical department. The great importance of this department has occasioned the adoption of extended measures for teaching it. I trust that you will prove, by the assiduity and success of your practical studies, that the College has not adopted these means in vain; but that, as in the preparatory branches, so in the finishing of your medical education, you will obtain that high standard of qualification that must insure the confidence and esteem of those among whom you may exercise your calling.

CHAPTER XXIII.

PUBLICATION OF 'PRINCIPLES OF MEDICINE.' 1843.

Well Received by Pupils and Profession—Recommended by other Lecturers—Remarks on the Work through all its Successive Editions—Abstract of Contents—Plan of the Work—Opinions of Sir James Paget, Professor Sir James Simpson, Dr. Symonds, Professor J. B. Sanderson, Various Reviewers, English and American—Letter from Dr. Herzig of Marienbad—Translation into Spanish in 1872 by Dr. L. Arocha, of Barcelona—Editions printed in America Ten Years after the last English Edition, and Copies supplied by Mr. H. Lea of Philadelphia.

The first edition of the 'Principles of Medicine' was published in the year 1843. In this the attempt was made to supply the want, discussed in the introductory lecture, by a systematic description and explanation of the leading and general facts and doctrines regarding disease and its treatment. This department of medical knowledge is also designated by the term General Pathology and Therapeutics; as distinguished from Special Pathology and Therapeutics, or the theory and practice of medicine in relation to individual diseases. Professor Alison's 'Outlines of Pathology' had suggested somewhat of the plan of the work, and I was indebted to him for some of its materials; but the 'Principles' embraced a wider scope, entered into fuller details, and in every point were illustrated by practical exemplification.

It was my first satisfaction to find that the work was highly appreciated by my pupils, who found in it a text book for the most difficult part of the course. But I soon learned that it was recommended by other Lecturers on Medicine; and it retained its popularity, through the three editions, which were called for: the second in 1848; and the last in 1856, when it had expanded to a volume of 600 pages, with much additional matter, including a new chapter of nearly fifty pages

on Prophylaxis and Hygienics. This was entirely original; and was almost the only treatise on the subjects in the English language, until several years later, when the comprehensive work of my former pupil, Dr. Parkes, appeared. To avoid repetition, the succeeding remarks will refer to the later, as well as to the first edition, which contained all the most original and characteristic features, but further extended and exemplified in the subsequent editions.

The whole work was the most difficult and laborious of all that I had ever undertaken; requiring not only extensive reading and personal observation, for the supply of facts, but also much depth of thought and careful deliberation in the interpretation and arrangement of the knowledge thus supplied, and in drawing inferences from it. In passing in review and describing such a multiplicity of subjects, it was also necessary to be very clear and precise in verbal expression, avoiding all obscurity or confusion of terms. I was often conscious of falling short of what I attempted to do; of leaving questions unanswered and difficulties unsolved. Nevertheless I obtained the credit of having given a more rational and connected view of the Principles of Medicine than had ever been given before; and in addition to many favourable reviews in the journals, I received numerous private letters expressive of general satisfaction.

Owing to my increased occupation in practice, together with the impediments of ill-health, the book has now been out of print for many years. It would be impossible to give here anything like an analysis of a treatise written in so concise and condensed a style; but as there seems little chance of its ever being re-edited, and as it can still be referred to in the public libraries, it may not be out of place to introduce an abstract of the contents of a work, which, for more than a quarter of a century, has occupied a conspicuous position in the medical literature of this country and America.

PRINCIPLES OF MEDICINE.

ABSTRACT OF CONTENTS.

EXPLANATION OF THE OBJECT OF THE WORK. DEFINITIONS. DIVISIONS OF SUBJECTS.

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ETIOLOGY—ON THE CAUSES OF DISEASE.

SECT.
I. Nature and Division of Causes.
II. Predisposing Causes.
III. Exciting Causes—Cognisable, Non-Cognisable.

Chapter II.

PATHOLOGY (PROPER)—NATURE AND CONSTITUTION OF DISEASE.

Functional Diseases.—Primary Elements.

I. Diseased Irritability.
II. Diseased Tonicity.
III. Diseased Sensibility.
IV. Diseased Voluntary Motion.
V. Diseased Reflex and Sympathetic Nervous Function.
VI. Diseased Secretion.
VII. Diseased Blood. Red Corpuscles.
VIII. — — Fibrin and White Corpuscles.
IX. — — Albumen, &c. Serum.
X. — — Fatty Matters.
XI. — — Saline and Mineral Matters.
XII. — — Water.
XIII. Changes in Blood by Respiration.
XIV. — — — — Secretion.
XV. — — — — Transformation of Chyle and Textures.
XVI. — — — from Foreign Noxious Matter—Toxæmia.

Chapter III.

PROXIMATE ELEMENTS OF DISEASE.

I. Anæmia (General).
II. Hyperæmia (General).
III. — (Local).
IV. — with Motion Diminished = *Congestion.*
V. — — Motion Increased = *Determination.*
VI. Results of Hyperæmia. Hæmorrhage, Flux, and Dropsy

SECT.

VII. Hyperæmia (Local). Excess of Blood, with Motion partly Increased, partly Diminished = *Inflammation.* Causes, and Mode of Operation. Phenomena and Nature of Inflammation. Symptoms and Effects of Inflammation. Nature and Symptoms of Results of Inflammation. Varieties of Inflammation. Treatment of Inflammation.

Chapter IV.

STRUCTURAL DISEASES.

I. Diseases of Nutrition. Nature and Classification.
II. Increased Nutrition. Hypertrophy.
III. Diminished Nutrition. Atrophy.
IV. Perverted Nutrition.
V. Transformation and Degeneration of Textures.
VI. Deposits in or upon Textures.
VII. Morbid Growths; Non-Malignant.
VIII. Malignant Growths.
IX. Disorders of Mechanism.

Chapter V.

CLASSIFICATION, SYMPTOMS AND DISTINCTION OF DISEASES.

I. Nosology.
II. Semeiology and Diagnosis.

Chapter VI.

PROGNOSIS, FOREKNOWLEDGE OF RESULTS OF DISEASE.

Chapter VII.

PROPHYLAXIS AND HYGIENICS. PREVENTION OF DISEASE AND PRESERVATION OF HEALTH.

Food. Clothing. Air. Temperature. Ventilation. Bodily Exercise. Mental Occupation. Sleep. Excretion.

Plan of the Work.

Taking *Anatomy* and *Physiology* as the basis of our knowledge of the structures and functions of the body in health, the *Principles of Medicine* comprise the study of the same structures and functions, as changed by disease, together with the powers of remedial agents to correct or cure them. And inasmuch as structures and functions consist of elements, simple, —and in various combinations,—the Principles of Medicine

also consist of elements, simple, and in various combinations,—ultimate or primary,—proximate or secondary—and combined in various complications.

The principles of medicine may be deduced in part from a knowledge of the animal structures and functions, conjoined with an acquaintance with the agents, which cause and remove disease: but they are chiefly arrived at, by a generalisation of the facts observed in an extensive study of disease itself; whether these effects be manifested in the living, or in the dead body. But so far as they have been ascertained, they become more intelligible to the student, if explained synthetically; that is by describing first, the causes of disease, then the operation of these on the body; and lastly the resulting changes in function or structure, which constitute the more elementary forms of disease.

The text throughout the work was divided into numbered paragraphs, which severally became propositions; each to be referred to by its number, for proof or explanation, in subsequent paragraphs. This was an attempt to follow at a distance the method of Euclid's geometry; and to preserve an intelligible connection throughout the work.

Etiology, or a knowledge of the *causes of disease*, appropriately introduces the consideration of the effect—*disease* itself: the nature and constitution of which may then be conveniently considered under the head of *Pathogeny*, or *Pathology Proper*, which occupies the greater part of the work; being combined with such an elementary view of the *Principles of Treatment*, (*General Therapeutics*) as experience and reason will supply. Throughout the volume merely speculative discussions were carefully avoided; and at every point, the endeavour was made to introduce such practical inferences with regard to treatment, as to render it helpful in the art, as well as in the science, of medicine.

The history of this work in its successive editions extends through many subsequent years; but as it would be tedious to recur repeatedly to the same subject, which may not equally interest all readers, it may be well to conclude it, by quoting the testimony of a few, out of many more critics,

both from public journals and private correspondence of various dates during the last forty years.

24 Henrietta Street, Cavendish Square:
December 13, 1856.

My dear Sir,—I am sincerely obliged to you for giving me a copy of the new edition of your Principles of Medicine. I have always esteemed the work as the best instance of the employment of physiology in the general doctrines of medicine; I hope to study the second as carefully as I studied the first edition. Let me add that few things could gratify me more than your generous approval of my researches.—Believe me to be very truly yours,

JAMES PAGET.

Dr. C. J. B. Williams.

Edinburgh: October 7, 1848.

My dear Sir,—

. . . . . .

I read few medical books—but I have re-read your Principles with great pleasure and great profit. As a systematic view of pathological and therapeutical knowledge, it is immeasurably, I think, before any other existing work. And I have heard several of our physicians here express a similar opinion. Never mind Dr. Bennet criticising you on some minor points. Here at least no body minds it.—Yours very truly,

J. Y. SIMPSON
(Professor of Obstetric Medicine in the University of Edinburgh).

To Dr. Williams.

Clifton: November 20, 1856.

My dear Williams,—Accept my too tardy thanks for your valuable gift—the new edition of your 'Principles:' a work far too good for me to presume to praise it. I regard you with veneration—that you should have found time, with your immense practice, to write such a book in the first instance; and then to keep it so perfectly *au niveau*.

. . . . . .

Ever yours affectionately,

J. A. SYMONDS.

49 Queen Anne Street, London: 1868.

Dear Dr. Williams,—I feel deeply indebted to you for so kindly sending me your book, in which the progress of pathological inquiry

since it was published was in so many respects anticipated. It is a great pleasure to me to possess a copy of it as a gift from yourself, and as a testimony of your approbation. . . .

I am, dear Dr. Williams, yours sincerely and gratefully,

J. B. SANDERSON.

The best exposition in our language, or we believe in any language, of rational medicine, in its present improved and rapidly improving state.—*British and Foreign Medico-Chirurgical Review.*

We find that the deeply interesting matter and style of this book have so far fascinated us, that we have unconsciously hung on its pages, not too long indeed for our own profit, but longer than reviewers can be permitted to indulge. We leave the further analysis to the student and practitioner. Our judgment of the work has already been sufficiently expressed. It is a judgment of almost unqualified praise. The work is not of a controversial, but of a didactic character; and as such we hail it, and recommend it for a text book, guide, and constant companion to every practitioner, and every student, who wishes to extricate himself from the well worn ruts of empiricism, and to base his practice of medicine on principles.—*Lancet, Dec.* 27, 1856.

Dr. Williams' book has now become so deservedly one of the medical classics of the present century, and is so generally in the hands of the profession, as not to require from us a word of praise. —*Dublin Quarterly Journal, Feb.* 1857.

The Principles of Medicine of Dr. Williams has by common consent become one of the classics of our profession. Few works have done more towards accomplishing that union of the science and practice of medicine, so indispensable for its perfection, and which are too apt to be found separate from each other.—*New York Medical Times.*

A text book to which no other in our language is comparable.— *Charleston Medical Journal.*

The work as now presented to the public, is perhaps the most perfect of any treating on similar subjects: it combines the science and the art, the theory and the practice, in a most masterly manner; and we feel confident that as knowledge of the practical views and scientific principles laid down in the book, become more generally known, medicine—practical medicine—will advance in the same proportion to a greater perfection and certainty.—*New Orleans Medical and Surgical Journal.*

There is no work in medical literature which can fill the place of this one. It is the *Primer* of the young practitioner, and the *Koran* of the scientific one. Three large editions of it have already been exhausted in the United States; and now the fourth is presented. It must have, so long as the volume remains uncumbersome, the first place among pathological authorities. We feel warranted in saying that no medical book has yet been written which contains so much in the small number of pages which compose this one, and yet it is complete.—*Stethoscope.*

This exceedingly valuable work is the best, we believe, in the whole round of medical literature. The division of the different subjects is excellent. The author's method of investigation and mode of expression, in our judgment, are faultless. We can most cheerfully commend the work as the *best* that has ever appeared on the principles of medicine.—*Southern Journal of Medical and Physical Sciences.*

I have to offer my hearty thanks to the respective writers of these too flattering extracts from journals; although not one of them is or ever has been personally known to me.

The two following letters, from foreign physicians I add, as proving that the spirit of my intentions in my mode of treating my subjects has been appreciated and turned to profit, in studying the Principles and in applying them to practice, in a manner utterly unattainable by the readers of other systems or dictionaries of practical medicine. The first is from Dr. Herzig of Marienbad.

Marienbad: April 1858.

Sir,—Being one of the admirers of your 'Principles of Medicine,' I beg you will allow this circumstance to serve to me as an introduction. I do not intend saying a word about the general merits of this work of yours: I would only mention the impression it has made on me, by telling that I derived from it a great deal of information, and read it every day during the last winter, with pleasure; for such is the management of the immense subject, that the book is extremely interesting. It must be particularly so to the practitioner, who endeavoured to study the numberless chronic deviations from health, as I tried to do, during twenty years' practice in this place. As in such cases, frequently no (special) disease is developed, the physician cannot obtain an accurate knowledge of the nature of these cases; but by following your way, and your

most excellent directions for the study of the 'elements of disease,' of which they really only are numberless combinations, no special disease being as yet formed. Your directions for the treatment of constituents of disease are equally excellent and useful; and those for the employment of eliminant and tonic remedies, and their combined or successive use, are the best that I ever read. I was much gratified to see that you highly esteem saline chalybeate waters, and that you also mention those of Marienbad.

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Dear Sir, I find that I have here very imperfectly expressed my thoughts on your book, which I hope will still for a long time be my valued teacher; my deep sentiments of esteem for you I think I must add, and conclude by saying that I am, your thankful admirer,

Dr. Williams. L. Herzig, M.D.

The second letter is from Dr. L. Arocha, a Spanish physician, who had been practising in South America.

Caracas: April 25, 1870.

The study and practical application of Dr. Charles J. B. Williams' 'Principles of Medicine' so convinced me of the intrinsic merits of the work that I resolved upon translating it into my native language,—the Spanish—with the deep and conscientious desire of facilitating the knowledge of it, and extending the sphere of its utility in the interests of humanity. The accomplishment of such a task, by one not blessed with a strong constitution and health, and in the exercise of a not inconsiderable practice, demanded great perseverance and devotion, and the constant and assiduous labour of several years, together with some expense. But happily it has been accomplished; the labour of love is finished, and the work is now prepared to be sent to the press.

The letter concluded with the request to be permitted to publish this translation, which was cheerfully accorded; and two years later, I received a closely printed volume of four hundred pages in Spanish, published at Barcelona, entitled 'Principios de Medicina ó Pathologia General,' &c., which I deposited in the library of the Royal Medical and Chirurgical Society.

Mr. H. Lea, the enterprising publisher of Philadelphia, informed me by letter that American editions of the Principles

continued in demand long after the last English edition was out of print; and he supplied me with copies within the last ten years, adding the remark that he was 'surprised at the vitality of a book that has so long disappeared in its own country.' It was much to my regret that the state of my health and my other more imperative engagements prevented me from continuing the production of a work that had risen so high in public estimation. In the last edition I was ably assisted by my friend and former pupil Dr. R. J. Mann, with the result that has proved quite satisfactory: but I have never since been able to find any one willing (if competent) to undertake the arduous task of re-editing the work, with all the additions and modifications which the advance of knowledge may have rendered necessary. It has therefore lost its place as a text book and educational work: but there are copies enough remaining in the libraries and in private hands to justify the expectation that its original contributions to the science and art of medicine will not be forgotten.[1]

Although the Principles of Medicine was intended only for professional readers, being too technical in language to be intelligible to the general public, yet I have met with several non-medical men who have made a study of it. Mr. Buckle, the author of the 'History of Civilisation,' told me that he had thoroughly mastered it, by making an analysis of its contents, and he has referred to it repeatedly in his great work as a standard authority on the subject. Dr. Jeune, the late Bishop of Peterborough, was another of its amateur readers.

[1] This expectation has not been fulfilled in a quarter from which I had least reason to anticipate an oversight. In Dr. R. Quain's *Dictionary of Medicine*, except in the articles by my son, my works are entirely ignored.

CHAPTER XXIV.

REMINISCENCES, RECORDS AND COMPARISONS. 1843–1844.

Reminiscence of my Excellent Friend, George Gulliver—His Varied and most Valued Labours in Physiology and Pathology—His Untiring Devotion to his Favourite Work—The Heartiness and Faithfulness of his Long Friendship. Continued Narrative of Students' Attendance and Names, 1842 and 3—Proceeds of College Fees and Private Practice. Warnings of Over-work. Increase of Family, and Necessity of their Absence in the Country—Other Slight Trials. Good Understanding with the Students and Officials—Entries and Fees of 1844, 5, and 6—Names of most Diligent. Increase of Private Practice—Discussion of Scale of Physician's Fees—Too Low for Work done and Value received — Comparison with Barristers. Family at Brighton, seen only once a Week—Wear and Tear from Daily Railway Journeys.

Before I take leave of the subject, I must refer to one friend, who gave me the most valuable assistance, by his exact pathological knowledge of matters connected with the work, particularly in microscopic observations. I mean George Gulliver F.R.S. I was introduced to him by our excellent mutual friend, Dr. Clendinning, who had invited our help in researches on the heart at the Marylebone Infirmary. Gulliver was delighted with my demonstration of the action of the valves of the heart; and I was equally pleased at pumping him, for some of his profound knowledge respecting fibrin and the blood corpuscles. So we took to each other, and were fast and faithful friends to the time of his death last year. The assistance which I received from him, in various parts of the Principles of Medicine, was not limited to quotations from his published works: he also gave me private information on many important points; and revised some of the sheets for the press.

Although plain in manner, and rather provincial in speech, his truthful heartiness made him a favourite, even in the fastidious society of the Life Guardsmen and their friends, with

whom he passed much of his life. But devotion to the pursuit of natural history and physiology in various branches, was his ruling passion; and the patience and perseverance with which he carried on his manifold researches, and his rare intelligence and skill in conducting them, have left their mark by valuable discoveries in many departments. He had also a taste for literature, natural and cultivated; and his Hunterian Oration at the College of Surgeons gives evidence of the endowments of a refined mind. Through many late years of his life he was a martyr to inveterate gout, which although crippling and prostrating him, did not entirely debar him from interest in his favourite pursuits. I had been his principal medical adviser during our long intercourse; and after his death received from his widow by his direction a touching memorial of his friendship.

To resume the narrative of events. The number of new pupils entered to the class of Medicine in the year 1842–43, was 73; with fees amounting to 362*l.* In 1843–4 number 88; fees, 367*l.* The names most marked in the examination book were James Clifton, James Hakes, Samuel Battley, W. H. Meadows, Charles R. Prance, A. Markwick, Henry Fearnside, Kirkham Burton, Henry J. Stokes, S. S. Alford, William Clayton, Geo. Moreton, John Gabb, J. H. Elliott, W. W. Moore, Robert Hopwood, Geo. Pickess, W. Edw. Wright, Geo. A. Hallion, W. Henry Allchin, Richard Swan Finch, Robert Kemp, Fred. Marshall, Robert Ellis, Robert Cross.

The income from private practice went on steadily increasing—in 1842 being 681*l.*; and in 1843, 1,249*l.* There was no longer any cause for anxiety about the future, provided my health should continue to stand the work. By systematically following a very careful and regular mode of life, and continuing to avoid visiting and late hours, I was enabled to keep a fair amount of health and strength, but not without ominous warnings from time to time. I sometimes had attacks of vertigo, which would end in vomiting, if not relieved by immediate and absolute rest for several hours. Happily these attacks never left behind them any want of mental vigour; and up to the time of their coming on, the flow of thought was never impaired. I heard some of my friends

speak of having written, or lectured themselves, *dry*; I never experienced that feeling. Even in the midst of fatigue and bodily weakness, the mind would seem as active as ever, until the body stopped it by faintness and general failure. But I now can see that during those and the following years of high pressure, I was enduring a perilous strain, which sooner or later must lead to a break down of some kind.

I had now four boys, and at last, a girl; and this increase of my family, together with the state of my wife's health, rendered it necessary that they should be much out of town; so that besides the summer absence of several months, some weeks at Brighton, or some other watering place, were occasionally required. This did not increase domestic comfort: but with so many blessings some sacrifices must be expected.

Then I cannot say that the proceedings in the College or in the Hospital were altogether so harmonious as they were at first. With the students I was always on good terms; and except the differences arising out of some being industrious, and others not, I had never any disagreement with them. I may say the same of the majority of the professors, with whom I continued on amicable terms: but there were two or three with whom I could not always agree; and who seemed to me not to be animated with a spirit of conciliation. It would answer no good purpose at this distant period to detail these petty quarrels: but I cannot avoid noticing their occurrence; for the unpleasant feelings connected with them did not pass away during the remaining period of my connection with the College. But I never suffered any misunderstandings to interfere with the regular and conscientious performance of my duties both to the patients and students; and I am confident that I never gave any reason for complaint of remissness or want of punctuality on my part. With the house physicians, clinical assistants, and clinical clerks, I was always on the most amicable terms; perhaps more so than was always agreeable to complaining parties: but I am not aware of having been ever chargeable with unfair favouritism. The visiting physicians are necessarily brought into close relation, in the clinical department, with the house physician, and he is expected to be present at the clinical lectures. In this

capacity successively, among others, Dr. Croft, Dr. Lankester, Dr. R. Quain, Dr. Allchin, and later, Mr. J. T. Clover, gave useful assistance, and disposed me always to forward their interests on fitting occasions. The clinical lectures were regularly continued once a week, and in the summer, sometimes twice. Some of them were reported in the 'Lancet,' or 'Medical Gazette' by the clinical clerks.

The entries of new students in the class of Medicine in 1844-5 were 77. Professor's fees, 348*l.* 13*s.* 4*d.*

In 1845-6, number 78, fees 386*l.* The names most marked in the examination book were, Alex. Henry, William Sedgwick, John Elliott Wood, Richard Eliot West, John Yeoman, Bryan Lister, N. H. Littleton, John Rowe, Henry Chawner, Temple C. Paley, John R. Humphreys, Gopal Chunder Seal (Hindoo from Calcutta), Fred. Greenwood, James Bailey, Joseph T. Clover, W. D. Wilkes, Septimus Lowe, Wm. Geo. Harvey, John Doidge, Thos. Limbery, S. F. Statham, E. L. West.

Private practice in 1844 brought 1,492*l.*: and in 1845, 1,717*l.* to which may be added nearly 100*l.*, as half the profits on the sale of the Principles of Medicine, first edition.

By far the greater part of my practice lay in what are termed consultations; whether in conjunction with another practitioner or otherwise. The cases were for the most part new,—seen for the first time, and often for that once only. In common with other consulting physicians, I think that the fee of one guinea is not a sufficient remuneration for the amount of time and skill bestowed on a new case; and that the first fee ought to be at least two guineas, as has been customary in consultations with other physicians. In olden times a physician, with watch in hand, would feel the pulse of a patient, look at his tongue, ask a few questions, write a prescription and take his fee; and, thus disposing of patients at the rate of six in the hour, would be well remunerated by one guinea from each. But now, a physician must first inquire carefully into the history of the case; then in addition to the old appeal to pulse, tongue, &c. he must physically explore, and if necessary measure, the chest, and abdomen; often he has to chemically test, and microscopically examine the secre-

tions, and call to his aid the thermometer, and perchance the laryngoscope, and the sphygmograph; and then, in addition to a fully explained prescription, he may have to supply a long dietary table, and perhaps have to write a letter to the doctor in the bargain! Such consultations can hardly be completed within the hour; and are poorly paid by a fee of even two guineas. Very early in my career I began to protest against the irregularity and insufficiency of physicians' fees, and to claim for the most skilful and complete medical advice, an adequate estimation and remuneration. Except from persons of limited means, the first fee should not be less than two guineas; and a letter of instruction to a doctor, or of directions for future guidance, or of authoritative statement of opinion, should be entitled to a similar remuneration.

Compared with those of barristers of the highest eminence, the honoraria of consulting physicians are very low, and do not represent the learning and dignity of the profession, or the value of its work. If health and life are esteemed at least as highly as property and civil rights, their guardians ought not to be stinted in their emoluments; yet, not only are lawyers' fees higher, but in judgeships and many other offices, lawyers have many prizes, which are altogether wanting in the medical profession. At one time I considered the usual rate of fees for eminent physicians and surgeons travelling to distant places too high, being a guinea per mile by road, or two thirds of that sum by rail—and proposed that the charge should be for time, rather than for distance—say five guineas per hour—but difficulties arise as to charging for night as well as day, and I found that the plan would not work well. But instead of a uniform charge of two-thirds of a guinea per mile for all railway journeys, that proportion should be required only for out-of-the-way places, or those accessible by few trains; but for all easily accessible points, with abundant choice of trains, and facilities of going and returning, half a guinea per mile is a sufficient recompense.

I fear that these remarks may lay me open to the imputation of a mercenary feeling prevailing among other considerations; but my desire is only to claim what is due to our profession, after all its expensive and laborious outlay, and with

its weighty and anxious responsibilities, and its not inconsiderable amount of risk, and wear and tear to both mind and body.

The augmentation of my professional income was a providential help for the increasing family needs. We had now six children; and for their and my wife's health, a frequent residence in the country was required. Several years in succession, I had a house at the seaside (generally at Brighton) for some months. With my incessant engagements, this involved much separation from my family, or the not very restful alternative of rattling up and down in train for a Sunday's holiday; but I was thankful for these, the only peeps I could get at my children. As for racing up and down every day, it was to me a professional impossibility, even if I could have borne the bodily fatigue. It may seem charmingly convenient to men of business to have a seaside home, accessible by rail in little more than an hour—no more than a drive to a suburban villa! But the wear and tear from those rapid noisy railway journeys —twice daily, binding and grinding in time and toil—is too much for a highly worked brain. Merchants and men of the Stock Exchange, may bear it, with their limited office hours, and their freedom from nightly calls or studies—but doctors *cannot*; and still less can professors, with their double-strained brain work. But I have seen how the daily double railway journey used to tell, even on men of business. In my weekly return on Monday morning, I used to watch many of these up and down daily travellers; and by the end of the season, I could see their hair whitened, and their faces more wrinkled, —aged, in fact, by the daily reiteration of the haste and din of the iron road. In those days the Brighton line was notorious for its noise and unsteadiness. Of late years it has been much improved.

Whilst on the subject of railways, I may take this opportunity to mention, that a few years later, I was requested by the editor of the Lancet to write some notes of my experience on railway travelling, and its effects in health and disease; these notes appeared in that journal about the year 1865; to which I must refer, as I have no room for them here.

CHAPTER XXV.

FORMATION OF THE PATHOLOGICAL SOCIETY OF LONDON. 1846. PRELIMINARY PROCEEDINGS. ELECTED FIRST PRESIDENT.

Address at First Meeting—Difficulties of Medicine as a Science, and as an Art—Want of more Positive Knowledge and Demonstrated Facts: sought during Life by Clinical Study—after Death by Careful Inspections and Examinations, with all the Aids of Physical and Chemical Scrutiny—Opportunities of Study of Morbid Anatomy few: we want means to increase them and use them to the utmost: which hope to do in this Society, by getting Specimens from every Quarter and of every Variety—Further Objects—Anecdotes showing the Want of Pathological Knowledge in Profession—Pressing Necessity of removing this Want, especially in London, the Great Emporium of Disease and Death, as well as of everything else—Pathological Society has attained an Unparalleled Success, having issued Thirty-Four most Valuable Reports, carried on its Meetings with unabated Interest, and won the Adhesion of all of the Highest Eminence in the Profession.

THE year 1846 was marked by the formation of the Pathological Society of London, by which I was honoured by being elected its first President.

I had joined the Royal Medical and Chirurgical Society some years before; and although my engagements permitted me to take little part in its proceedings, I had earnestly joined with Mr. James Moncrieff Arnott and others, in an attempt to establish a Pathological Branch of that Society. A few meetings were held, at which specimens were exhibited, and sufficient interest was shown in its proceedings, but not sufficient to secure its continuance, in opposition to the red tape and lethargy of the old Society.

The idea of establishing a separate body under the title of the Pathological Society, seems to have originated with Dr. Edward Bentley of Guy's Hospital; and he with several friends met together in February of this year, and agreed upon the issue of a circular to such members of the Profession, as

were known to be more particularly interested in Pathological studies. To this circular, a sufficient number of favourable answers was received, to encourage the movers to proceed. 'A provisional committee of the gentlemen who had expressed their concurrence was appointed, with Dr. Bentley and Mr. Nathaniel Ward as secretaries; and these after having several times met at the houses of Drs. Babington and Williams, drew up the plan of the Society, as it is at present constituted, appointed provisionally the several officers, and agreed on the issue of a Prospectus to the members of the Profession at large, inviting their support and co-operation.

'This appeal met with unexpected support; and on October 20, at the first meeting of the Society, there were enrolled 106 members.'—*First Report of the Pathological Society of London.*

To be chosen the first President of this Society was, and ever has been since, a subject no less of gratification than of surprise, in consideration of the senior standing and greater eminence of many others on the list; but my zeal in the cause of Pathology, of which my recent work had become an evidence, probably influenced the Members of the Council in selecting me for the office. I have no notes of my address on the occasion of the first meeting; for I had not much time for preparation; and I believe, for the most part, I spoke extemporaneously: but I find in the Lancet of October 31, 1846, a report, from which I make the following extract.

'Gentlemen,—In opening the public proceedings of the Pathological Society of London, in this first year of its existence, I cannot but feel the painful disproportion between the vastness and importance of the objects which are contemplated in its formation, and my power to do them due justice. But the obvious merits of our cause set aside all personal considerations; and confiding in their own greatness and strength, rather than in my feeble advocacy of them on this occasion, I beg to submit to your attention a few remarks on the uses and difficulties of the study of pathology, and on the modes in which the proceedings of this Society are calculated to advance it.

'That practical medicine, as a science, and as an art, is a most intricate and difficult subject, will be admitted by all who have con-

scientiously engaged in its pursuit,—from the zealous student, who when he leaves the comparatively easy and pleasant paths of the introductory sciences, struggles in the thickets of the practical department,—to the veteran practitioner, who, after much toil and disappointment in trying to thread the labyrinth, has been compelled to work his way by some short cut of empirical routine. That practical medicine is unsatisfactory, as well as difficult, is obvious, not only from the notorious popularity of empiricism in any new form, but also from the avowed scepticism in its utility, of many who stand high in the profession; and I lament to add, from the desertion from its ranks of some few estimable men into the erratic bands of homœopathy, hydropathy, mesmerism, or some such specious chimæra.

'It would detain you too long were I to go through all the steps of the argument, by which, as I think, it may be proved that one, if not *the*, great reason, why the study of medicine is so difficult and so unsatisfactory, is because it has hitherto been taught and treated too metaphysically,—too much by closet speculation, too much by book description, mystified or cramped as this often is by a vague, or Procrustean phraseology, derived from ages in which it would be vain to expect language commensurate with the advanced knowledge of the present day. Too little has been done by physical demonstration—too little by appeals to the senses—too little by direct observation and experiment—too little by habits of that careful and accurate investigation of phenomena, to which alone Nature discloses her truths. Hence the knowledge obtained by the student is of that abstract kind which helps him little at the bedside of the patient. It has not upon it the stamp of Nature. He finds much more, or much less, than what he expects from the description of others; and his senses are unpractised to discern for himself. Herefrom arise confusion, vacillation, and failure in practice; and distrusting all scientific medicine, he either falls into a narrow routine of empiricism, or becomes a ready advocate for any partial hypothesis, which applies some universal remedy or easy line of treatment to all diseases.

'We want, then, the means of rendering the study and science of medicine more personal and practical; more a subject of individual observation and demonstration; and for this end we look, first, to clinical medicine; and guided by the applied skill of former observers,—our understanding enlightened by the standard truths of anatomy and physiology,—our senses sharpened and aided by all that optics, acoustics, hydraulics, mechanics, and chemistry can do for us,—we examine signs and symptoms, and make ourselves ac-

quainted with disease in the living body. But our research stops not here: we pursue disease even to the field of its triumph in death; and there, in the sad havoc which the destroyer has made in the organisation, we find out the mode of his warfare, trace out his weapons and plans of attack, and thus forewarned, seek for means of counteracting them in future.

'One great cause of the difficulty in mastering morbid anatomy is its great variety, and the want of means of illustrating it by demonstration. No one questions the necessity of demonstrations and actual dissections in order to obtain a due knowledge of *healthy* anatomy, and much time and labour are properly bestowed on these studies: yet one healthy body dissected, is a type of all. It is quite different with *morbid* anatomy: disease and its results present infinite varieties, which yet require to be seen, to be properly understood; and no one can hope to attain a comprehensive knowledge of the anatomy of disease, without witnessing post-mortem examinations for a series of years. The ordinary career of a student at a hospital enables him to see but a tithe of this extensive subject; and even hospital physicians, with years of experience, are frequently meeting with something new. I have myself been at work for a quarter of a century, and have assisted at the examination of more than two thousand bodies; yet even now, I rarely attend one, without finding out something that is new and instructive. How little chance is there, then, for practitioners in general, to become conversant with this most instructive branch of medical science, with their scanty opportunities, reduced as they are, by want of time and inclination for the pursuit, and by the difficulties arising from popular prejudice!

'Now, to lessen these difficulties, to open an extended field, and to promote zeal in its cultivation, we propose to proceed on the plan of co-operation and concentration. By making this Society a medium of exhibition of morbid specimens, and by our meeting here to examine and discuss them, we create a school of morbid anatomy, where those demonstrations, that are elsewhere wanting, may be carried on, and where every member of the Society is given an advantage, even beyond that of any one hospital physician; for here we expect to receive contributions from all the hospitals in the metropolis; to cull the fruit from each pathological field; besides collecting many a stray floweret from private practice, which but for us might "blush unseen." I will trespass on your patience by reading from a paper, drawn up by the committee, a statement of the chief objects which we hope to accomplish by this Society.

'1. The exhibition and description of morbid specimens, recent, preserved, or represented by drawings or models; not excepting those that are common, provided that they are sufficiently well-marked to be fit for demonstration.

'2. The critical examination of unusual specimens, referred to the Society for the purpose. A sub-committee has already been appointed for the purpose, of some members of the Council much experienced in morbid anatomy, and who will report to the Society on any specimens transmitted to them.

'3. The classification and simultaneous exhibition of series of specimens, with the view to illustrate the progress or varieties of diseased structures.

'4. The comparison of like preparations from different museums, with the view to discover discrepancies, and to establish uniformity, of arrangements and nomenclature.

'5. To direct the attention of morbid anatomists to particular objects of interest; and to promote pathological research by systematic observations and experiments.

'6. Objects of exhibition illustrative of pathology in the living body, whether cases of disease, or microscopic appearances of matters derived from them, will fall within the province of the Society.

'But observe, gentlemen, we do nothing without an appeal to the senses, by specimen, preparation, drawing or model, and this is one distinguishing feature of the Society. We can admit no merely speculative argumentation or discussion. The communications are to be confined to a description of the object to be exhibited, with such a brief history as may serve to explain its pathological bearings; and the remarks of members and visitors must be restricted to the same topics. Our objects must speak for themselves, and require neither long papers nor long speeches. If members differ in their views, let them argue, not by mere words, but by specimens; and we shall all be instructed, if not convinced, by the argument; and in this multiplication of facts there will be the best chance of attaining the truth.

'It is intended, through the co-operation of our excellent secretaries, to keep an accurate record of the proceedings of the Society; and from these the most valuable communications will be selected by the Council, for publication in the *Transactions* of the Society.

'Such then, gentlemen, are the chief aims and objects of the Pathological Society of London, and I trust that they commend

themselves to you as both feasible and useful. I hope that it will appear that we are not infringing on ground already occupied; for there is abundance of material without intruding on the wide domain of symptoms, diagnosis, prognosis, and treatment. Proper pathology, and its groundwork, morbid anatomy, are its legitimate and fertile field. We hope to cultivate these, not only directly by our own work, but indirectly, by spreading abroad a knowledge of morbid anatomy, by fostering zeal in its pursuit, and by raising up a large class of intelligent cultivators. We hope that more bodies will be opened, and not only so, but better opened, and better understood. I need not tell you, gentlemen, that the utility and instructiveness of post-mortem inspections depend on the care and completeness with which they are carried out. Permit me to trespass on your patience with two anecdotes in illustration.

'A friend of mine, zealous in the pursuit of morbid anatomy, endeavoured in vain to excite a kindred spirit among the practitioners of the neighbourhood in which he had just settled. One asked him, "What is the use of opening bodies?—it is never satisfactory: we never find what we expected."

'Another case was an answer to this. Having watched with great interest a remarkable case of pulmonary disease, I was very anxious to know the result of the post-mortem examination, which was concluded before I arrived. I was told that the only disease found was enlargement of the heart, which being all that the physician in attendance *expected*, he was satisfied, and looked no further. As I *expected* more, I had the body reopened, and found *what I expected*—extensive consolidation of the lung. So far I was satisfied also: but searching further, I found *more than I expected*, in a general dilatation of the bronchial tubes: and this was the case in which I first discovered the connection of that lesion with pleuro-pneumonia. This, although *unexpected*, was still more satisfactory.

'And herein lies the value of morbid anatomy, if pursued with a single eye, searching for truth; it brings the diagnosis and pathology of the practitioner to a tribunal from which there is no appeal; it detects error; it establishes sound views; and it extends the boundaries of knowledge. Indeed, it is no small stigma on the profession in London, that no association has been hitherto formed for the cultivation of this branch of knowledge: that while Paris, Dublin, and even some provincial towns of the kingdom, have their pathological societies, active, and working much good in their spheres, the metropolis of this country, the great emporium,—not more of fashion, wealth, trade and commerce,—than of life, disease and death, with a population, living and dying, of nearly two

millions,—should have no institution to make its study, that science, which regards the change and decay of the body, to which these millions are all, sooner or later, tending!

'Gentlemen, it is for us to remove this stigma; and permit me to congratulate you on the array of high talent and eminence comprised in the body who compose your Vice-presidents, Council, and Secretaries. With such a combination of zeal and ability to direct our proceedings, and with your cordial support and contributions, we shall be sure to succeed in so good a cause. For myself, I have only to crave your indulgence in my attempt to perform the duties of the highly honourable office to which the too favourable opinion of the Council has kindly promoted me. However inadequate my abilities may be to acquit myself as you have a right to expect, both my gratitude to you for conferring on me this honour, and my hearty desire to co-operate in this most instructive pursuit, will excite me to exert them to the utmost.'

Of the Pathological Society of London it is not too much to say that it has attained and preserved to the present time, an amount of popularity, utility, and eminence, equal, if not superior, to that of any medical society in this or in any country. Its published Transactions, now amounting to thirty-four volumes, form a repertory of illustrated morbid anatomy and pathology, unequalled for extent and variety. In the attendance of its members, in the supply of interesting objects, and in the animation and searching character of its discussions, there never seems to have been any material falling off; so that its whole career of thirty-seven years, has been one of uninterrupted success.

Although the proposal to establish the Society was well received by many of the profession, it did not at first gain the support of all. Among the original members were a few veterans of the highest repute: Dr. Richard Bright, Dr. B. G. Babington, Cæsar Hawkins, James Moncrieff Arnott, Dr. John Forbes, C. Aston Key, and Robert Liston, among the number. Drs. Watson and Latham held aloof for a while; until convinced of the genuine excellency of the Society; when they joined, and soon succeeded to the chair which I had first occupied. Among those most actively and continuously concerned in the formation and early management of the Society, in addition to Dr. Bentley, its originator, I would especially

record the names of Dr. Peacock and Dr. R. Quain, who worked long and effectively, in editing the Transactions, in addition to their official duties, successively as Secretary, Treasurer, and President.

The seal of the Society is a medallion of the head of Dr. Matthew Baillie, with the motto (suggested by myself), 'NEC SILET MORS.'

Long after the termination of my official connection with the Society during its first two years, I often was gratified by attending its meetings, and never without learning something new:—this experience of its first president has been often re-echoed by his successors.

CHAPTER XXVI.

CONTINUED NARRATIVE. CENSORSHIP OF THE COLLEGE OF PHYSICIANS. DEATH OF LISTON. 1846–1848.

Entries and Names of Students. Private Practice. Appointed Censor of College of Physicians — Duties—Examinations—Visits to 'Poticaries.' Death of Liston—Accelerated by Reckless Habits—His Character and Skill—Mr. Cadge's Account of his Illness and its Termination, asserting Absence of Physical Signs of Disease—My Letter in 'Lancet,' describing Physical Signs found, and Serious Opinion formed—Letter from Dr. Watson complaining of my Letter, and stating he also had found Signs—Thought Gravely, and duly Warned Patient: further Upbraiding Me for Unfair Imputations—Letter in Reply from Author, retracting Erroneous Statements derived from Mr. Cadge's Account, and disavowing any Intention of imputing Blame; but repeating desire to vindicate Physical Diagnosis—Letter of Satisfaction from Dr. Watson, with Assurance of uninterrupted goodwill—Fulfilment proved by Mutual Amity and Friendship continued for upwards of Thirty Years.

In resuming the notice of events in the next two years it will be unnecessary to dwell on common details. The entries of new pupils in 1846–7 were 72. Professor's fees, 389*l.* In 1847–8, new pupils, 77. Fees, 420*l.*

The names most noted in the examination book were:—Henry Briggs, James Morris, Arthur S. Willocks, J. Ellerton, Thos. Park, J. Russell Reynolds, Theophilus Taylor, Wm. Filliter, Geo. Wyld, Geo. W. New, Soorjo-Coomar Chuckerbutty (Hindoo), Fred. J. Gant, Thos. J. Warburton.

Fees from private practice amounted in 1846 to 2,171*l.* and in 1847 to 2,749*l.*

There was also the accession of a small fee (25*l.*) for the office of Censorship of the College of Physicians, which I held for these two years. The duties of this office were not onerous; and although important and responsible, were generally rendered agreeable by the courteous and friendly feeling which prevailed at the Board. The most important

duties were the examinations for the membership, before the quarterly meetings of the College, conducted by the President, and four Censors. The President then was Dr. John Ayrton Paris, an able and well informed man, but getting rusty, and hardly keeping pace with the progress of the age. The Registrar was Dr. Francis Hawkins, and my colleagues in the Censorship, were Dr. (since Sir) George Burrows, Dr. Clendinning, Dr. Nairne, and Dr. Geo. Budd. A less important but not unamusing office of the Censor's board at that time, was to visit the apothecaries' shops at stated times, for the purpose of examining their drugs, 'that they' (in the language of the Act) 'the said Physicians may and shall execute that search and view, and the due punishment of the Poticaries for any their evil and faulty stuff, according to the statute.' After our fulfilling the letter of this enactment by calling at Apothecaries' Hall and a few of the druggists' shops in the city, and inspecting and tasting samples of their drugs, the day was concluded by a dinner at the Thatched House, where the President was ready to receive us. This absurd formality has been very properly discontinued.

A more unpleasant duty attaching to the office of Censor was that of admonishing any physicians practising in London without the authority of the College. Although there was still much in the practices, and even in some of the by-laws of the College, which I did not approve of, and which I hoped would be altered, yet it was the existing authority, by law established, and in virtue of my office I was bound to uphold it, at least by warning, which was not meant in an unfriendly spirit: but I fear it sometimes became a cause of offence.

This (1847) was the year of poor Liston's death, which was a great loss to the College and to the profession. We were always on friendly terms; although there was not much community of sentiment between us; and he did not except me from the jocular disparagement, with which he was in the habit of speaking of medicine and of doctors in general. His skill and manual dexterity in operative surgery, and the efficacious simplicity of his methods of treatment, had gained for him the highest reputation and success, which surmounted

the objectionable qualities of his character, which, if they were obnoxious to others, were quite as damaging to himself. There can be little doubt that the disease, which cut short his life at a vigorous age, was the result of the high feeding and violent exercise, which he made his habit; and that its fatal issue was accelerated by his obstinate recklessness. He was not a man of intemperate habits; but one, who lived regularly well, and, denouncing all messes and slops, fed almost entirely on meat and bread, with no other beverage than ale or wine. Then he made a constant habit of a long fast walk, such as to Hampstead or Highgate, and back, before his substantial breakfast, and devoted all spare time which he could get, to boating, yachting, or horse exercise. These were his habits; and he firmly believed that to them he owed the remarkable share of strength and activity which he enjoyed. The continued strain or high pressure led to a breakdown, comparatively sudden, in the full course of his energetic and successful career.

I was absent from town at the commencement of his illness; and although he sent for me on my return, I did not continue to attend him, as he had placed himself under the care of Dr. Watson and Dr. Forbes; and I did not see him for a month before December 7, when I heard of his death.

The circumstances of Mr. Liston's illness and death were reported in the Lancet of December 11 by Mr. Wm. Cadge, his late House Surgeon; and became the subject of a correspondence in that journal, originating with a letter from me, and continued between Dr. Watson and myself. I think it right to republish the whole matter, for although it has been often referred to, it has been chiefly by quoting Dr. Watson's letter of reproof to me, without noticing my letter of defence, or Mr. Cadge's statement, the errors of which were the real cause of misunderstanding, and were all that I had to retract.[1]

[1] I purposely refrain from adding any fresh recollections or notes on the subject: let the recorded history speak for itself. I have only put in italics those passages in Mr. Cadge's statement, which Dr. Watson's letter proved to be erroneous, and which had caused me to write in my first letter a paragraph, which I afterwards retracted.

Death of Robert Liston Esq. F.R.S.

(*From the* '*Lancet*,' *December* 11, 1847.)

We have received the following succinct and interesting account from Mr. Cadge, his late house-surgeon at University College Hospital, who was in constant attendance upon him before his death, and who conducted the post-mortem examination.

In the early part of the summer of the present year, Mr. Liston first complained of a feeling of constriction at the top of the wind-pipe, and a sense of choking when stooping forwards. It was also noticed by those constantly in his company, that he had a manifest, though slight, difficulty in swallowing. This difficulty appeared most palpably when swallowing the last drops of a glass of whatever he was drinking. He occasionally remarked this himself, but seemed to think very slightly of it. He had also occasionally a most peculiar cough, harsh, dry, and grating; this however was so seldom that it gave him little uneasiness: in short, he may be said, so far as appearances went, to have been in fair health. He lived, as usual generously, and took his customary long morning walks.

It was late in July, that the first serious, and alarming symptom occurred, while receiving visits from patients at home, and when perfectly quiet; he suddenly felt his mouth fill with fluid, and retiring into his dressing-room, he coughed up between thirty and forty ounces of florid arterial blood; it was expelled almost without effort; the blood was in one clot, and without froth or mucus—fainting came on, and the hæmorrhage ceased. He soon recovered, and remained quiet during the remainder of the day. Drs. Watson and Forbes visited him, and examined the chest; *but could detect nothing morbid either in the lungs or circulation*; the source of the bleeding was therefore very obscure. He himself hinted that there might be an aneurism; but *in the absence of all physical signs of such a lesion, the most favourable view was taken of the case, and it was conceived that it might be a salutary relief from a congested lung*. From that moment he lost all sense of choking or constriction in the throat, and was in fact better in health than previously. The only treatment adopted, was local abstraction of blood by cupping, spare diet, and less violent exercise. With these restrictions, he continued his ordinary avocations till the beginning of October, when the cough returned. It was at first thought to be a mere catarrhal affection from exposure to cold; for some weeks he paid no particular attention to it, till it became more frequent and distressing, attended with expectoration, which was difficult,

small in quantity, and of a rusty colour; occasional dyspnœa supervening.

Drs. Watson and Forbes were again consulted. Blood-letting, counterirritation and confinement to the house, were had recourse to, and were followed by marked alleviation of his symptoms; and on November 28 he resumed his professional occupations, and rode out on horse-back.

December 1. While at the house of a patient, he was seized with what appeared to be a fit of spasmodic asthma: he returned home immediately, and soon recovered. In the evening he had a still more severe attack; and from that period to the time of his death, he was unable to assume the recumbent posture.

December 2. The dyspnœa returned, the usual remedies were administered but without much benefit: in one of the attacks he inhaled chloroform, but to no purpose: there was no constitutional disturbance or pain.

December 3. Fits of dyspnœa somewhat less urgent: the greatest relief was obtained from opium: *the physical signs were still obscure: percussion and auscultation pointed out no perceptible lesion of the lungs or heart*; but from the loud, noisy, prolonged inspirations, it was conjectured that the dyspnœa was dependent on mechanical pressure upon the trachea or bronchi.

December 4. The breathing throughout the day was more laboured, with occasional fits of coughing and difficulty of deglutition: the pulse rose to 100, and became somewhat hard. In the evening Dr. Latham was associated in consultation. It was resolved to take away more blood; and the loss of twenty ounces afforded the greatest relief: the breathing became easier, the dysphagia diminished; and with the aid of half a grain of muriate of morphia, he passed a quiet night.

December 5 and 6. There was no particular difference in the state of the breathing; but it was manifest that his strength was rapidly sinking. Sir B. Brodie saw him in consultation. He continued however to get weaker, and died at half past ten o'clock on the evening of the 7th, soon after a paroxysm of dyspnœa.

Post-mortem examination thirty-six hours after death.—The thorax was opened by Mr. Cadge, in the presence of Sir B. Brodie, Drs. Watson, Latham, and Forbes, and Mr. J. Dalrymple. The lungs were found but slightly collapsed, congested throughout, but otherwise perfectly healthy: the pericardium contained about an ounce of transparent yellowish serum: the heart itself was healthy, save a slight atheromatous deposit in the mitral and aortic semilunar valves. On removing the subclavian vein and cellular tissue from

the arch of the aorta, the cause of death at once became apparent. An aneurism, as large as an orange, flattened from before backwards, was seen pressing back the trachea; it arose from the upper part of the arch, close behind the left carotid artery, at the origin of the innominata, which seemed almost to commence from the aneurismal pouch: the communication with the aorta was by a circular opening, as large as a halfcrown. On opening the trachea from behind, the mucous membrane was seen to be very dark and congested, and in its front part, where it was firmly connected with the tumour, there were three or four whitish prominences as large as split peas, situated between the rings: it was at first difficult to understand what these elevations really were: but on splitting up the pouch, and removing the fibrinous laminæ, they were drawn from between the ring, leaving the latter quite bare, and the trachea perforated in three or four points; they were in short, portions of the clot, which half filled the sac of the aneurism. The source of the hæmorrhage and the cause of death was at once explained.

In the next week, December 18, the Lancet contained the following letter.

THE PHYSICAL SIGNS OF DISEASE IN THE CASE OF THE LATE MR. LISTON.

To the Editor of the Lancet.

Sir,—Having seen, and heard it stated in several quarters, that there were no physical signs of disease detected in the chest of my lamented colleague, I think it right, for the credit of physical diagnosis, as well as in justice to myself, to make known the results of my own examination of the case, which were (according to my custom) recorded in my note-book shortly after the examinations were made.

On the attack of hæmorrhage at the end of July, Mr. Liston sent for me; but unfortunately I was absent in the country, and did not return to town till three weeks after. My first examination was made on August 18 in the presence of Mr. Cadge (who was made acquainted with the signs, which I detected) and another friend of Mr. Liston, whose name I do not recollect. At this time Mr. Liston felt no ailment whatever, and had resumed his habits of daily active exercise. The following is the note of positive abnormal signs detected on exploration of the chest at that time.

'Marked dulness above the left clavicle and scapula (on strong percussion): large tubular breath and voice sound in the same space: tubular expiration above upper inner angle of right scapula.'

The tubular sounds here mentioned were not of that slight muffled character, sometimes heard in the upper posterior regions of healthy chests (generally in thin persons); but were boldly marked, and obviously morbid signs; and knowing the buoyancy of his spirits, and his propensity to dangerous exertions of strength, I hesitated not to state to my friend my conviction, that there was some disease in his chest, which if not dangerous from its extent, was so from its locality, in the vicinity of great blood-vessels; the profuse hæmorrhage, which had occurred, being a signal warning of such danger. The precise nature of the disease was not equally evident. There was obviously deep-seated consolidation, or compression, of the inner part of the apex of the left lung, causing the deep dulness between the clavicle and scapula, and large tubular sounds in the same region; and the tubular expiration at the upper inner margin of the right scapula, implied a similar cause, but to less extent, operating on the right side: but whether the lesion was tuberculous or other deposit at the root of the lungs, extending towards the apex of the left,—or a small aneurismal tumour, compressing these parts,—or a morbid growth encroaching on them,—could not at that period be determined. The occurrence of the profuse hæmorrhage deterred me from suspecting the last to exist; and not finding any unusual pulsation, or other signs of aneurism, I then inclined to the first of these alternatives. But my earnest cautions to my friend were grounded, not on the precise nature of the disease, which was doubtful, but on the presence and position of *some* disease, which was not doubtful, and which, considered in connection with the previous hæmorrhage, was most alarming.

But alas! my warnings were little heeded; and on several subsequent occasions on which we met in professional intercourse, he had always some feat of activity or strength to recount, in falsification of my diagnosis. At one of these times, he suggested to me, that a former fracture, and consequent overlapping of the ends, of the left clavicle, might cause the signs which I had heard: but my reply was, that this could not produce dulness or tubular sounds above the scapula. It is a poor consolation, but it saves me from self reproach, that I never said anything to countenance his disposition to make light of his malady; but uniformly asserted my conviction of its serious character.

The second and last occasion on which he consulted me, was early in November, during the second of a series of attacks of

hoarseness, with cough and deficient expectoration, which continued to recur, until the last fatal attack in December. The result of my examination at this time (I think the first week in November, but the date is not inserted) is thus recorded:—'The same dulness in upper left, and an increase of tubular sounds, which are very loud above left scapula and at inner margin of right scapula: *something pressing on trachea*; but no obvious pulsation.'

There was now evidently a tumour pressing on the trachea near its division; for the tubular sound was different from that in the larynx; and I expressed to him my fear that there would be either suppuration, hæmorrhage, or increased dyspnœa, unless active means were used to reduce the internal swelling. I strongly urged him to be cupped to ten ounces above the left scapula, and to avoid every description of excitement or exertion. He did not follow this advice in any particular; but, as he afterwards told me, got relief by strong exercise in riding a restive horse, which promoted expectoration.

After this I did not see him professionally, as he placed himself under the care of physicians, who, both before and after this period, found no physical signs of disease, and who therefore took a more favourable view of the case than I did.

The result is known, and I make no further comment on it; but I cannot close this letter without drawing the attention of your readers to the paramount importance of the supra- and inter-scapular regions, as the field for physical signs of serious and deep-seated diseases of the lungs and great vessels. It has been the common mistake, since the time of Laennec, to search too exclusively *below* the clavicles; yet in five-sixths of the cases of incipient diseases of the lungs, and in more than half the cases of aneurism of the arch of the aorta, the signs are heard at an earlier period, and more distinctly, between the clavicles and scapulæ, and within the scapulæ, than in any spot below the clavicles.—I am Sir yours faithfully,

C. J. B. Williams.

Holles Street, Cavendish Square: Dec. 1847.

Letter from Dr. Watson *to* Dr. C. J. B. Williams.
Lancet (*Dec.* 25, 1847.)

Henrietta Street, Cavendish Square: Dec. 1847.

Dear Dr. Williams,—More than one person came to me yesterday, to call my attention to a letter of yours published in Saturday's Lancet. On referring to it I perceive that you have done great injustice to Dr. Forbes and to me. I say to us in particular, because

we are the only physicians who had charge of poor Liston, both in the early and in the latter stages of his fatal illness; and this Mr. Cadge's brief, and in some points imperfect statement, which I did not see till after it was printed in the Lancet, has made known.

You are quite wrong in supposing and stating that we 'found no physical signs of disease,' and 'therefore took a more favourable view of the case than you did.'

From the very first, my anticipations of its ultimate event (as many could testify) were most gloomy, and so, I know, were Dr. Forbes's.

Soon after the hæmorrhage, I noticed, and recorded in my note-book,—which you are welcome to see,—some imperfection in the breath sounds about the upper part of the left scapula, something not quite natural also at the summit of the right, and some appreciable difference in the voice in the two supraspinal fossæ. I then went out of town and was absent five weeks. After my return Mr. Liston called on me (on November 13) complaining of cough. He had then manifest shortness of breath. From that time 'physical signs' were never absent. A very peculiar, rough, and loud respiratory murmur pervaded both lungs. At first I confess I apprehended, from this sound, the rapid multiplication of small tubercles; for I had been informed that his mother, and also a sister, had died comsumptive; and by these facts I interpreted the previous hæmorrhage. But very soon Dr. Forbes and I convinced ourselves of the presence of some obstacle in the large and primary air-passages, whence the remarkable sound was propagated. At that time Mr. Liston was bled, with relief, and the blood was distinctly buffed and cupped. For three weeks at least before his death our opinion (and that of everyone else who saw him in our presence) was clear, that some mechanical impediment existed about the bifurcation of the trachea, or in the first division of the bronchi. The inspirations were comparatively facile—the expirations were long, noisy, and growling. Some dysphagia was also detected, although the patient himself was reluctant to acknowledge it. *Possibly* (we thought) an enlarged bronchial gland, or some morbid growth, was exercising pressure there—*most probably*, an aneurismal tumour. Of all this, if it were worth while, several witnesses might be called.

From various phrases and sentences in your letter, which I need not cite, as well as from its whole tenour, an ordinary reader, unacquainted with the real facts of the case, could not fail to infer, that we did not as you had done, 'warn' our patient; that we 'countenanced his disposition to make light of his malady,' and

ought therefore to stand 'self-reproached;' that we sanctioned his taking 'strong exercise in riding a restive horse' which promoted expectoration, and that had the solemn and responsible office of advising and treating this eminent surgeon been yours instead of ours, a different 'result' might have been hoped for; for you close your observations with these words—'After this, I did not see him professionally, as he placed himself under the care of physicians who, both before and after this period, found no physical signs of disease, and who therefore took a more favourable view of his case than I did. The result is known, and I make no further comment on it.'

Now the real truth is (as his family can tell you) that our poor patient's imprudent acts were done in spite of our most earnest and reiterated remonstrances—remonstrances so urged, as sometimes to make him almost angry with us, and especially with Dr. Forbes, who living near him, saw and expostulated with him more frequently than I had the opportunity of doing. Our entreaties to him to 'avoid every description of excitement and exertion,' were as pressing as yours could have been, only (from circumstances) much oftener repeated. We had even prevailed upon him, just before his sudden attack of severe dyspnœa, again to leave town for a while, that he might ensure the means of quietude. Much the same kind of treatment which you affirm would have been appropriate, was counselled by us and adopted. He was cupped, twice, I think,—bled twice from the arm, blistered, and kept on low diet.

In short all the treatment that you would have recommended, we recommended; all that could be positively known concerning the disease during life we knew as surely as yourself—viz.: the certain existence of mechanical pressure about the lower part of the windpipe; and all that could be reasonably conjectured of its material cause, we saw as clearly as you did—viz., the probable existence of an aneurismal tumour.

I hope I have satisfied you that you have been greatly misinformed respecting the facts and practice, upon which directly or indirectly you have been pleased to comment in a tone of disparagement.

Now was it courteous, or even fair, to publish what you have published, in reference to the physicians, who could be no other than Dr. Forbes and myself, without previously ascertaining from one or the other of us, whether the facts of the case really were as you understood them to be? Would it have been charitable or generous so to exhibit our mistakes, even if you were sure that we had made them? Do you indeed believe that if our lamented

patient had been entrusted solely to your care, and could be induced implicitly to obey your directions, the fatal 'result' of his disease would have been prevented?

One more question I venture, in perfect amity to propose for your calm consideration. Is it consistent with your character—with your high rank in our profession—with your office (which presents you as an example to so many) in one of our great metropolitan schools of medicine—thus publicly and needlessly, under profession of a zeal for science, to proclaim your own superior sagacity, and (by implication) the comparative ignorance or unskilfulness of others, your contemporaries, pursuing in the same place, to the best of their humbler abilities, the same vocation with yourself, and in this instance, engaged in the peculiarly anxious duty of ministering to the relief of a professional brother. Would Baillie or Heberden have done this?—I remain yours truly,

THOMAS WATSON.

Letter from Dr. C. J. B. WILLIAMS *to* Dr. WATSON.
Lancet (*Jan.* 1, 1848.)

Holles Street, Cavendish Square: Dec. 27, 1847.

Dear Dr. Watson,—I assure you that I much regret that my letter in the Lancet has appeared to be unjust to you or Dr. Forbes, and I am most willing to retract any expressions, which may have wronged you.

On a re-perusal of my letter, I cannot perceive that there is any allusion to you, direct or indirect, except in one sentence, and this I would willingly retract, even had your explanation not proved the information contained in it to be incorrect. The paragraph is quite detached, and may be well suppressed, without impairing the sense of the rest of the narrative, which when separated from it, will not, I trust, be liable to misinterpretation: it is as follows:—

'After this, I did not see him professionally, as he placed himself under the care of physicians, who both before and after this period, found no physical signs of disease, and who therefore took a more favourable view of the case than I did.'

I repeat that I fully retract these expressions; but I may be allowed to mention, in apology for my having used them, that so far as they related to the physicians, they implied nothing beyond what had already appeared in the Lancet of the week preceding my letter, and had been repeated in many of the public prints. Thus in the report of Mr. Liston's illness by his assistant Mr. Cadge, it is stated that 'nothing morbid either in the lungs or

circulation was detected;' and 'in the absence of all physical signs of such a lesion' (aneurism) 'a favourable view was taken of the disease.' Again, so lately as the report of Dec. 3, it is mentioned that 'the physical signs were still obscure,' &c. These reports corresponded with an impression generally abroad, with which I became the more acquainted from my position, as Mr. Liston's colleague, especially directing inquiries to me, and no one seemed to have been more completely under this erroneous impression than the patient himself, who, doubtless, blinded by his hopes, and disregarding what both you and I had told him, expressed to several individuals, whom I could name, his satisfaction that auscultation had discovered no disease in his chest.

That I should have been under the same mistaken impression with regard to your examinations, will appear less strange, when you recollect, that—although the colleague of the patient, the physician whose aid had been first sought, and who had subsequently twice examined him, and detected positive indications of disease—I was neither summoned to any of the consultations on the case, nor personally referred to by those in attendance, for any information or suggestion, which possibly I might have been able to supply; therefore I remained in ignorance of the real result of your examinations; and concluding the published (Mr. Cadge's) report to be correct, I unfortunately relied on it, in the obnoxious sentence, which it is now the chief object of this letter to cancel.

The rest of my letter is entirely free from allusion to any subject, but the case of the patient, with the diagnostic and practical inferences which I made when he consulted me. I do not feel that the general tenour of the letter at any time deserved the personal interpretation, which you have attached to it, and which has led you to propose to me a series of questions severely reflecting on my conduct. At all events my retractation of the only sentence which is personal, will, I trust, leave the communication, as it was intended to be, one of a simply scientific character, penned with the especial intention of describing the signs which I had detected, in an obscure case of disease, and of vindicating the credit of physical diagnosis. Nor can it be said to have been altogether unsuccessful in accomplishing these objects, if we regard, not merely its own contents, but also the particulars which it has elicited from your pen, which are the more valuable, from the longer and more frequent opportunities which you had of investigating the disease.—I remain, yours faithfully,

C. J. B. Williams.

Letter of Satisfaction from Dr. Watson *to* Dr. Williams.
(*From the Lancet, Jan.* 8, 1848.)

Dear Dr. Williams,—I thank you for your candid, temperate, and satisfactory letter of explanation.

If (as I am glad to know from your assurance) I misconstrued the meaning and spirit of your letter in the Lancet, my excuse must be, that I did so in common with every one of those who have spoken to me about it, and they have been many. Indeed it was the interpretation put upon it by some of my friends that first brought the letter under my own notice. It was especially the paragraph which you so frankly retract, with the addition of the next little sentence—'The result is known, and I make no further comment on it,' that (as it seemed to me) gave force and point to all which had preceded. But for this paragraph, I should not have thought of troubling you with any expostulation on the subject. I assure you that I did not know, until I saw it so stated by you in the 'Lancet,' that Mr. Liston had 'first sought your aid,' or that he had formally consulted you at all. On the very morning of the hæmorrhage, he sent me a message, simply requesting that I would call upon him. I did so on my first going out, and found him recovered from the faintness produced by the loss of blood. But I was not then, nor at any time, informed that he had previously sent for you. I became aware, indeed, at a much later period, that his chest had been once examined by yourself, as well as by another physician, also his colleague in University College. But I believed that these examinations had been casually made upon some occasion of your officially meeting together. Had I known that Mr. Liston had desired your counsel in the first instance, I should have been, not willing merely, but anxious, in a case so painfully responsible, to obtain the comfort and advantage of your valuable assistance.

Let me assure you, finally, that if, writing to you, as I did upon the spur of the occasion, I transgressed the just limits of self-defence, or so expressed myself as to cause unnecessary pain to your feelings, I am sorry for having done so. I trust also,—and on my own part, am sure,—that what has occurred in this very distressful matter will not be suffered to impair the mutual respect and goodwill which had hitherto subsisted between us.—I remain, yours truly, Thomas Watson.

Henrietta Street, Cavendish Square: December 1847.

The generous spirit of mutual concession and amity, which marks the conclusion of this letter, was equally satisfactory to myself, and was loyally preserved between us during our subsequent friendship of thirty-five years—unruffled by any further misunderstanding; while it was promoted by much genial professional and social intercourse; and my attachment to this good man was more than ever confirmed by his noble act in heading my defence against a mad onslaught made on me in later years.

In July 1847 we had the affliction of losing my wife's father, Mr. James Jenkins of Chepstow at the age of 76 after a long life of consistent piety and well-doing. Long engaged in mercantile pursuits, he had latterly lived as a country gentleman, cultivating a little of his own land, and chiefly engaged in works of charity and public utility. Although always hospitable and genial to those around him, he preferred a private life to one of publicity; and it was not without reluctance that he accepted the offices of High Sheriff and Deputy Lieutenant for the county, that were pressed on him. By all ranks, high and low, and especially by his numerous relations and friends, and by the poor, he died, universally beloved and lamented.

CHAPTER XXVII.

RETIREMENT FROM UNIVERSITY COLLEGE. 1848–1849.

Unsettled State of University College in Surgical Department—Class of Medicine Flourishing: but Health Failing. Limitation of Hospital Physicians' Term of Office. Increase of Income—House Discomforts—Residences in St. John's Wood—Increase of Family—Home Arrangements—Religious Privileges. Increase of Students—Names. Lectures Ill-reported in a Journal, and Disavowed. Resignation of Professorship—Last Appearance at Public Meeting—Vote of Thanks—Letter of Professor Grant.

The death of Liston was the indirect occasion of other disagreements in connection with University College, not like Watson's and mine, soon explained and happily adjusted, but long and bitter, and venting much angry feeling in the medical journals of that year, far from edifying to the public, or salutary to the Institution, in which they originated. I took no active part in them then, and shall not enter on the subject now: but I found it difficult by that impartiality to avoid giving offence; and I cannot say that anything like general harmony was restored during the remainder of my connection with the College, or long after. The invitation of Professor Syme from Edinburgh, to supply the offices vacated by Mr. Liston's death; the resignation of the Chair of Surgery by Professor Cooper; the sudden abandonment of his new office by Mr. Syme,—were the great disturbing events, which interrupted the smooth working of the Surgical School, and spoiled prospects, which had been most promising.

The unsettled state of the Surgical School did not affect my department. On the contrary, on that and the following year I entered more pupils than I had in any year since the commencement; and I was well satisfied with the proficiency of the most industrious among them. I think that I had myself greatly improved in the practice of lecturing; and by

concentration and arrangement, had been able to include a good deal of additional matter. A second edition of my 'Principles' had been called for; and this work not only enabled me to refer to it, instead of giving the whole in the lectures, but it made the whole course more intelligible and interesting, as illustrating what was laid down in the 'Principles.'[1]

But in the last two years, I began to find my health failing in various ways. All my life I had been an occasional sufferer from toothache. I was often in the hands of the original Samuel Cartwright of Old Burlington Street, famous as an expert extractor of teeth, and still more famous for preserving them by one mode only—stopping with gold. Two of my upper front teeth were beginning to decay forty years ago; they were saved, and are still sound, with Cartwright's gold stopping. I have had many stoppings since, with various materials; but none to last like that. But the toothaches which now visited me were attended by bad abscess of the jaw. I had also boils, sometimes carbunculous, breaking out

[1] I introduce here a few of the closing remarks, with which I concluded my lectures in later years.

'Gentlemen, I now bring to a conclusion the longest course of lectures ever given in this country, amounting to upwards of 150 lectures and examinations. Yet so far have we been from exhausting our subjects, that many, I have had to treat in outline, rather than in detail. If lectures on the practice of medicine were to be given as fully as those on Anatomy and Physiology, two courses would be required instead of one. In fact, our subjects are never exhausted; there is ever something new; which, if studied with intelligence, is interesting—interesting not only as a part of our business, and with the object of doing good, —but as presenting beautiful illustrations of some of those general facts or properties, called laws, in physiology, pathology, and therapeutics. It is to make you understand these general facts or principles, that I have chiefly laboured; because they are the very keys to the most useful knowledge of disease and of its treatment. Mere details you can get from books, and, more abundantly and truthfully, from the book of Nature. But such details are incomprehensible and appalling without some key or clue, to open and penetrate their mazes. I hope that you have now gained some such guiding principles, to help you through your remaining studies, and in the never ending study of practice, as to make you feel delight in pursuing them. Study is a desire, as well as a task; and, although laborious, it is full of pleasure if pursued willingly and thoroughly. Practice is not different: it is always toilsome; and if pursued unwillingly and imperfectly, it will be irksome and unsatisfactory; but entered on and carried out cheerfully, and with the full earnestness and intelligence which it deserves, it will be delightful as well as useful and profitable.'

in various parts; painful enough in themselves, and never seeming to me much bettered, by still more painful surgical treatment. Then sleep often failed me, and I was driven to seek relief in opiates, or other narcotics; and was one night nearly poisoned by the green tincture of Indian hemp—not from the largeness of the dose, for I think it was only twelve or fifteen drops,—but from previous exhaustion, by pain and fatigue. It gave at first ease and sleep; but then came a trance-like faintness, with irregular pulse and sensation of sinking, which lasted several hours. For some months I continued ailing in various ways; but not ill enough to be obliged to give up work. Fortunately it was not during the lecture season: but my private practice was now heavy; and I often had to refer my patients to friends who assisted me; particularly Dr. Richard Quain and Mr. J. T. Clover, who from their position as resident medical officers of the hospital, knew my practice well, and were well qualified to continue my treatment. Nor were they losers in any way by their kind help, for I always insisted on their retaining the fees received during their attendance; and these introductions were very useful to them in their subsequent career.

But these failures of health were serious warnings to me, that I must lessen my field of labour. I had long entertained strong convictions, that hospital physicians ought not to continue in office, when the claims of private practice encroach so much on their time and strength as to prevent them from performing their Hospital duties efficiently. At the request of Dr. Forbes, I wrote a review of the work of Dr. W. Stokes on the Chest, in the British and Foreign Medico-chirurgical Review; I think in 1838; before I was myself a hospital physician, and in that article I had suggested that the appointment of Metropolitan Hospital Physicians should be limited to a term of ten or twelve years. This would be time sufficient to test their capacities. If a hospital physician profits by his position, and proves his abilities to the profession and to the public, private practice pretty surely follows, soon enough to make the hospital appointment no longer a necessity at the end of the term; he then resigns the hospital to another, who is free to devote himself to it, and make the most

of the office and its opportunities. If, on the contrary, a hospital physician in ten or twelve years fails to make his mark, and to prove his abilities to the profession or to the public, it is high time that he should vacate his office, and make way for a better occupant. If it be objected, this would be hard on the unsuccessful, and give no chance to second-rate men, however industrious and deserving,—I reply, *Hospital appointments are not for second-rate men.* Only *first-class men* deserve them, and can work them for the best; and through them only is the greatest amount of good to be achieved; but even the best men, when from full occupation, or other cause, they fail to give their best time, and their best abilities, ought likewise to make way for others. These views on the true aristocracy in the profession, and the optimism of its objects, I foresaw I should soon have to carry out in practice.

Although now in comparative affluence, (my professional income having reached 3,600*l.* in 1848), neither my family nor myself were comfortable in domestic arrangements. The house in Holles Street had become too small for the family and household, who were for the most part at Brighton, or elsewhere in the country; whilst the town house was devoted to the reception of patients, and bachelor quarters for myself. In 1847, I took a family house in Avenue Road, Regent's Park, where our third daughter (the second was stillborn), and eighth child, was born,—within sound of the lion's roar in the Zoological Gardens. In the following year, 1848, my family occupied a house in Upper Hamilton Terrace, St. John's Wood; and there our youngest daughter was born; completing the eight living children who composed our family. It pleased God, through many delicacies and trials, to spare them all to us, till March 12, 1880, when this youngest darling (Fanny) fell asleep in Jesus, and was interred in the cemetery of Cannes.

The placing of my family in the suburbs, where I could see them almost daily, was a great improvement on the more distant separation, which for many years had much marred my domestic happiness: but I could not help looking forward to a time, when, less overwhelmed with engagements, I would

have them all together with me in a family house in town, during part, at least, of the year. I was naturally fond of children, and greatly enjoyed entering into their pursuits and amusements; to say nothing of the deep and tender interest which a father must feel in their whole well-being, of body and mind. So it was a great gain to me, whenever, in a suburban residence, I could have the elder ones with me at the early breakfast and morning prayer; and regularly enjoy the Sabbath rest and worship together, without the hurry and turmoil of travelling to and fro. Our places of worship in London were, Trinity Chapel, Conduit Street, under the Rev. H. H. Beamish, who was long my patient as well as my pastor: and in St. John's Wood, the church of the Rev. Mr. Fiske, Hamilton Terrace. In addition to the usual ministerial intercourse, I sometimes engaged Mr. Beamish and others of the clergy in the neighbourhood, to come to gatherings of a few of the students, who met together for prayer and Bible reading. The Rev. Dr. Chandler and the Rev. F. Baring, after Bishop of Durham, were among those who came to my house in Holles Street for this purpose. Similar meetings were afterwards carried on under the title of the Christian Medical Association, at some of which it was my privilege to preside.

Before the opening of the winter session of 1848–49, I had been led to the conclusion, that this was to be my last course of lectures. The entries were more numerous than in any preceding year, except the first; being 181, including several old pupils. My kind old friend and colleague, Dr. Robert Grant, who had been Professor of Comparative Anatomy since the foundation of the College, was also a regular attendant; and it was wonderful to witness the zealous interest with which this veteran enthusiast in Biology listened to the applications of modern physiology to practical medicine.

The names recorded in the examination book of this year are:—Joseph Gamgee, John B. Scriven, James Stoate, Samuel Morris, John Langham, Paterson Allen, Richard Neale, Henry Hounsell, Walter Acton, Edw. Emra Earle, W. M. G. Hewitt, Geo. Thos. Jones, John Moore Swain, Henry Duncan Smith, Wm. Robinson, Chas. A. West.

I am quite aware that the names given in this and in preceding lists, do not include all the students, who distinguished themselves, by either gaining honours at the final examinations, or by executing well the offices of clinical assistants and clinical clerks. But I possess no record of these; and I fear to trust to my unaided memory to give a fuller detail. But I can unhesitatingly say that my relations with the students in general, and the most industrious and talented in particular, were always pleasant and cordial. It was this good understanding with the students, which was my principal encouragement to continue in this arduous work, longer than was good for my health, or profitable to my interests. The increasing engagements of private practice, and occasional failures in my health, did in the last two years render the work of the College and hospital more and more difficult: but I never shrank from it. To the last I continued to give the full number of lectures, and to visit the hospital as regularly and punctually as I had always done. Of late years, I understand that the senior physicians have been relieved of their more onerous duties by junior assistants. I was never offered any assistance, nor did I ask for any: I did my own work to the end, cordially supported by the officials, house physician, clinical assistants, and clerks. From the authorities of the College I received little recognition or encouragement; and the members of the Faculty were too much divided by the late differences to care much for any one who would not become a partisan.

There was one annoyance, connected with the last two or three courses of lectures, which I delivered at University College: they were reported in the 'Medical Times,' and very badly reported. The then editor of that journal applied to me for leave to report the lectures, adding the modest request that I would correct the proofs: to the latter I returned a decided negative, as I was far too busy to do so, even if I approved of the lectures being published in this way. I did not refuse the admission of a reporter; but I intimated that if the reports should prove incorrect, I should disavow them. At the same time I gave him the names of some of the senior students, who perhaps might be induced, by proper remuneration, to make

the necessary corrections. The reporter sent, was not a medical man; and of course his reports were full of blunders, from ignorance of the terms used. Instead of employing for the correction, one of the class, as I had suggested, the notes were revised by a medical man, who acted as sub-editor, but had never attended the lectures. Flagrant errors continued to appear; and I had to insert in the journals a notice that these reported lectures were unauthentic and incorrect. It was not till these disavowals were repeated, and elicited some abusive rejoinders from the journal, that these parodied reports were discontinued. It was among my regrets, and among the evil results of overwork with which I was harassed during the latter part of my connection with the College, that I was unable to authorise and superintend the publication of a course of lectures, which had cost me so much labour, and which had been undergoing revision and improvement in each of the ten successive years of their delivery.[1]

I took leave of the College on the occasion of the public meeting for the distribution of prizes in May. When I

[1] After I had sent my letter of resignation to Dr. Grant, the Dean of the Faculty for that year, I received the following private letter in reply.

University College, London: March 24, 1849.

Dear Dr. Williams,—Although for some years past you have prepared me to expect at no distant period the cessation of your labours in our College, I must say that it was with extreme pain that I read to-day to a full meeting of the Faculty your note of this date announcing your final determination to tender to the Council at their next meeting, your resignation of the offices which for ten years you have held in our College and Hospital so much to the advantage of our Medical School, and of the sick poor in this district, and of the rising generation of our professional brethren. I had still hopes that the ample appreciation of your distinguished talents, learning, and skill by our discerning students, and the pleasure we feel in doing that which we know we can do well, and the large beneficence of your acts here towards suffering humanity, would have kept you longer amongst us. Although it can little interest you to know it, I trust you will permit me to say that besides my bereavement by the loss of an old colleague, in so many points of kindred sentiment, your resolution deprives me of all remaining hope, as an admiring auditor of your invaluable lectures on the nature and cure of diseases, of supplying hereafter the portion of your highly philosophical and profound views of pathology, which my delicate health has robbed me of during the severer part of this winter.—I remain, my dear Sir, with great respect, your grateful pupil,

ROBERT E. GRANT.

Dr. Williams.

appeared in my gown, as usual, I was told privately by the Dean, (Professor Grant) that I was not expected. 'Why not?' said I. 'Oh it is reported that you have cut the College, and will have nothing more to do with us.' In my letter of resignation, I had asked to be promptly relieved of the hospital duties, which continued during the summer; but I had no idea of shrinking from the public completion of the duties which I had never failed punctually to perform.

In his address, the Dean made a most flattering allusion to my services; and the loss which he experienced in my retirement; this was so well received, that it elicited from the chairman, what seemed to be an *impromptu* proposal of a vote of the thanks of the meeting, which was passed; and I have some satisfaction in recording this, as it was the only complimentary acknowledgment I ever received from the College for my ten years of constant devotion to its work, at much sacrifice of health and comfort. I must say, I felt relieved at the release; and thankful above all to the Giver of all Good, who had bestowed on me this place of usefulness and honour, and granted me strength to fulfil its duties, to the best of my abilities, and to the satisfaction of my own conscience.

CHAPTER XXVIII.

CHANGE OF RESIDENCE TO UPPER BROOK STREET. VARIETIES. 1850–1851.

Review of Three Removals. Attempt to Return to Social Habits—Devotion to Practice necessary. Essay on Use of Cod-liver Oil—History of its Introduction—Trial and Success—Example—Sensation Caused by the Paper—Complaint of Dr. Hughes Bennett—Letter of M. Louis—Curative Power of the Oil in Liver Disease. Homœopathy, False, if Medicine True—'Like Cures like,' not Founded on Fact, and Infinitesimal Doses Absurd, Hypothetically and Practically—Appeals to Experience, disregard the Spontaneous Cures of Nature, and confound Sequences with Consequences—Evils of Homœopathy—Proposal to Meet a Homœopath in Consultation—Refusal—Hybrid Homœopathy.

The termination of the connection with University College left me free to prepare for another change, which had long been desirable,—removal to another habitation, in size and situation, more suitable to the needs of a large family: for a family house in town I longed to have, after having been subjected so many years to shiftings and separations. In two years I was so fortunate as to secure a house in Upper Brook Street, near to Hyde Park, which had been occupied by the Earl of Shaftesbury, before his father's death; when he succeeded to the title and the residence in Grosvenor Square. By adding a portico and two bed-rooms, I made it quite adequate to our needs; and so rejoiced in a commodious habitation in one of the choicest and healthiest spots in London.

This was my third and last move in London. Ten years I was in Half Moon Street—*waiting for* practice. Eleven years in Holles Street *getting into* full practice. In Upper Brook Street, it pleased God to continue my life for twenty-four years, in possession of a large consulting practice. This was the commencement of this last period, of nearly a quarter of a century; a period by no means uneventful; for each year

has its portion of important occurrences; but marking less change in the course of life; and therefore less, calling for record, or fit for publication. The concerns of a public body like a college or university are fit matters for publication; and it might be better for the public, if its eye were more upon them. But the records of private practice belong to the secrets of private life, and as a general rule, should be held sacred by those who are admitted to its confidence; with particular exceptions, to be made only on sufficient grounds.

I formerly mentioned, that the heavy tax on my time and mental labour, caused by my first undertaking the Professorship in University College, obliged me to give up all evening visiting and amusements, including even most of the conversazioni and meetings of learned societies. Some relaxation of this restriction might now be made; and the new indulgence proved very agreeable. But I soon found that health began to put in a veto. Having got into a habit of early hours, and great regularity, it was not to be changed with impunity. Evening meetings, however pleasant, were exciting, as well as fatiguing, and would drive away sleep from the overwrought brain: and a sleepless night was a bad preparative for the day's work, even moderated as work had now become. Then as the calls multiplied, which they did almost day by day, and the need of rest more urgently felt, the conviction was forced upon me that I still ought to avoid evening parties, and superfluous causes of excitement; and reserve my powers mainly for the daily work of life. Society and the arts had their charms, to which I was by no means insensible; and scientific meetings seemed still more legitimate in their claims on my interest; but above all were the claims of eight children, whose prospect of provision clearly lay in the preservation of my health, and in my steady devotion to a lucrative practice.

In the first number of the London Journal of Medicine, January, 1849, appeared a paper 'On the use and administration of cod-liver oil in pulmonary consumption.' This was my first public notice on this subject, in which I had been engaged for the last three years. My attention had been called to

cod-liver oil as a useful medicine in scrofula, by Dr. Darling, who practised for some time in partnership with Dr. Neil Arnott; and I had met him repeatedly in consultation. But the oil which he employed was of the impure kind used by curriers, and so offensive that I could never get patients to take it. In 1841, Dr. Hughes Bennett published a little book recommending the oil, on the authority of Dutch and German doctors. He gave me a copy, and urged me to try the light brown, as less offensive than the common kind. I did try it; but this also proved too disgusting for my patients to persevere in its use. Soon afterwards, several chemists began to produce oil from the fresh livers of the fish, much more free from the rank smell and taste, so that it became an available medicine. This pure oil I began to use in 1846, and with such surprisingly good results, that in 1848, I was able to report as follows.

'I have prescribed the oil in above 400 cases of tuberculous disease of the lungs in different stages, which have been under my care in private practice, and of 234 of these I have notes. Out of this number the oil disagreed, and was discontinued, in only nine instances. In nineteen, it appeared to do no good; while in the large proportion of 206 out of 234, its use was followed by marked and unequivocal improvement, varying in degree in different cases, from a temporary retardation of the progress of the disease and mitigation of distressing symptoms, up to a more or less complete restoration to apparent health.'

It is unnecessary to give further details from this paper, as the evidence which it gives of the power of cod oil as a remedy in consumption has been fully confirmed and extended by subsequent experience, particularly that fully detailed and explained in the work on Consumption, by myself and my son, published in 1871. But two or three extracts and notes may serve to illustrate the history of the subject. Of the eleven cases described, the following is a sample.

Miss —— æt. 28, of consumptive family: first visited Sept. 3, 1847, with Mr. Sawyer of Pentonville. Had slight cough ever since taking cold baths in summer of 1846. A glandular swelling formed below the jaw, and continued until the last two months. In March, 1847, an eruption of purpura appeared; and as it subsided, the cough became more troublesome, and flesh and strength

visibly declined. In the last two months she has become much worse, with distressing cough and shortness of breath, evening fever and night sweats, absolute loathing of food, and rapid emaciation. A week ago, expectorated a few teaspoonfuls of blood, with some relief to breath and cough. Now much emaciated, very tremulous and feeble, with rapid running pulse, difficult to count. There was complete dulness over more than half of the upper left chest, with mixture of large gurgling and pectoriloquy. Below less dulness, and moist crepitus only accompanied the respiratory movements. Breath weak, with moist crepitus, also above right clavicle; and large tubular expiration loud at the root of the right lung.

This patient seemed in so hopeless a condition, and had such foulness of tongue and delicacy of stomach, that I did not like to subject her to the annoyance of a trial of the oil; and therefore prescribed an agreeable draught with nitric acid, and a linctus for the cough. I visited her again in a week, and found her no better, but obviously rapidly declining, with the same insuperable disgust at nourishing food. Considering that matters could not well be worse, I did then order the oil, and took my leave, fully expecting to hear of her death in a few weeks. However, I heard nothing of her for two months, when one of her sisters came to consult me about her own health. I learnt to my surprise that her sister was not only alive, but comparatively fat and well, having little to complain of but hunger, and 'that she could not be allowed the run of the house, to eat any and every eatable to be met with.' This marvellous restoration of the appetite followed the first few doses of the oil; and the diminution of hectic, sweats, cough and expectoration speedily ensued. In Jan. 1848 I was requested to see her, not on account of any check in her progress, but for a temporary ailment. On entering the room, I looked round it twice before I could recognise my patient, so entirely was she altered in appearance; and she was, unquestionably, the healthiest looking person present. The pulse was at 80, of moderate strength, and the tongue quite clean. The fair outside was not, however, matched by an equal improvement within. The dulness and cavernous sounds still continued in the upper half of the left lung, but with much less gurgling of liquid; and the short crepitus of the lower parts of this lung had given place to a harsh and somewhat rough breath sound. The tubular expiration remained in the right interscapular region; but the breath sound was dry and clear above the right clavicle.

This lady called on me a fortnight ago (Nov. 1848), having been well and active ever since; only acknowledging a slight cough and short breath on exertion. The chest on examination manifested

continued improvement. She has continued steadfast in the use of the oil, and happily believes and feels the truth of what I tell her,—that it is as the staff of life to her. This lady lived many years after; a further history is mentioned in the work on Consumption.

The paper proceeds to discuss the mode of operation of cod-liver oil, a subject comprehended in the second edition of the Principles of Medicine, then just published; and concludes with directions for the preparation and administration of the remedy, on a due attention to which its utility and success mainly depend.

'If the experience of the profession at large should accord with my own, and with that of those who preceded me in recommending the oil, our prognosis with regard to phthisis must undergo some modification. To what extent this modification may reach, cannot be determined, until such cases as those which I have recorded shall have been tested by years of time: but even now, when we repeatedly find forms and degrees of disease, that former experience had taught us to be utterly hopeless and speedily fatal,—retarded, arrested, nay sometimes even removed, and almost obliterated by varying processes of restored health,—we must pause ere we, in future, pass the terrible sentence of "no hope," on the consumptive invalid.

'In conclusion, I repeat that further observations, and longer time are required to determine with accuracy the extent to which this agent can control or remove tuberculous disease of the lung; but I would affirm as the result of extensive experience, confirmed by a rational consideration of its mode of action, *that the pure fresh oil from the liver of the cod, is more beneficial in the treatment of pulmonary consumption, than any agent, medicinal, dietetic, or regiminal that has yet been employed.*'

I hope that I may not be judged conceited, if I say that this paper caused a great sensation among doctors and druggists, the effect being more lively in the trade, than in the profession. It was reprinted in the Pharmaceutical Journal, and circulated widely through town and country; and I had the mortification to see my name paraded among the bottles of the shops. This was a notoriety which I was far from coveting; and I did feel annoyed at sharing a popu-

larity with patent medicines and quacks. Having always testified an abhorrence of everything savouring of quackery, I began to meditate how I could best clear myself of such imputation. But further reflection and multiplying experience set me right, and banished my qualms. I had published nothing but what I knew to be truth, and truth which might be, and ought to be, useful to the community. In this view it became a duty to make it known for the public good, without too sensitively regarding censorious criticism. And I soon found that most of the world was with me. I not only received many congratulations from professional men on my success,[1] but patients came in increasing numbers to get the benefit of the *new remedy*;—I must correct that expression; for *new* it was not, nor had I the merit of introducing it. Dr. Hughes Bennett[2] was five years before me; Dr. Darling

[1] I insert only the following letter, which is remarkable, as coming from a man whose large and gloomy experience had rendered him very sceptical of the power of any remedy in this destructive disease.

Monsieur et honoré Confrère,—J'ai lu avec tant d'intérêt le mémoire que vous avez publié sur le traitement de la phthisie par l'huile de foie de morue, que je vous prie de me permettre de vous faire mes félicitations à ce sujet. Vous avez observé avec soin: vous avez ensuite analysé avec exactitude les faits soumis à votre observation; c'est la seule manière d'arriver à la vérité; et les vrais amis de la science ne peuvent que vous remercier d'un travail très pénible (?), et qui, s'il est continué, ne peut manquer de produire de grands résultats. Mais ne vous arrêtez pas en si beau chemin, et s'il se peut (car ce sera le complément de votre travail), suivez les malades que vous avez traités, dont vous avez amélioré la position, pendant quelques années; ce sera le sujet d'un mémoire, encore plus important que le premier, et qui vous élevera très haut dans l'esprit de vos contemporains.

. . . . . .

Encore une fois, continuez vos travaux, et agréez, monsieur et honoré confrère, l'assurance de ma très-haute considération.

Louis, Méd. de l'Hôtel-Dieu.

Paris, le 26 Oct. 1849.

The exhortation of M. Louis was not in vain; and some of the results were recorded in our work on Consumption, in 1870, when the great champion of the *numerical method* had ceased to count.

[2] Here, as on former occasions, I make a point of acknowledging the priority of Dr. Hughes Bennett in the recommendation of the cod-liver oil; but I never succeeded in giving him satisfaction, as may be inferred from the following note appended to this paper:—

'In a recent number of the "Edinburgh Monthly Journal of Medical Science," the Editor, Dr. Hughes Bennett (or some one writing under his direction) accuses me of plagiarism, in adopting his explanation of the action of the cod-liver oil without acknowledgment. But this explanation, which is not

thirty years, and Dr. Bardsley of Manchester fifty years, in recommending cod-liver oil as a remedy. If any credit is due to me, it was in my proving that the fresh pure oil, which every one can take, is at least as efficacious as the impure oil, which very few could take,—in my encouraging chemists to obtain it in that pure state;—and in my devising various means of facilitating the administration and securing the agreement of the remedy. These particulars, first given in this article in the London Journal of Medicine, were repeated more fully in subsequent publications (*Principles of Medicine* 3rd edition 1856, and *Pulmonary Consumption* &c. 1870), and require no further notice here; but one passage relating to the peculiar influence of the oil on the digestive organs and liver, deserves to be quoted, as bearing on points which have escaped general attention.

'Unlike other oils or fats, cod-liver oil rarely disorders the stomach or bowels, or disturbs the function of the liver. If taken in any quantity, vegetable oils commonly purge; and animal oils turn rancid in the stomach, causing heartburn, bilious attacks, and even jaundice. On the contrary cod-liver oil generally improves all the chylopoietic functions, and distinctly promotes the action of the liver; so that, in several of the cases above narrated, the appetite and power of digestion are restored, and patients are enabled to take an amount and variety of food, beyond what they were accustomed to, even in health. I cannot help thinking that

his, but quoted from Ascherson and other German writers (and is combined by Dr. Bennett with the notion of the oil acting by its iodine), is by no means that which I propose, as may be seen on reference to the text. The professed review which contains this accusation, betrays such gross misunderstandings of the work, which it criticises, and such a spirit of personal jealousy, that I do not think it needful to notice it.' I really do not know what first set Dr. Bennett in such violent opposition to me. I could not agree with all his views; but in my dissent I was never aware of having said anything personally offensive; yet in the review of my 'Principles,' above alluded to (the only unfavourable one, I believe, that had ever appeared), the general tone was that of such open hostility, accompanied by so much inaccuracy and misrepresentation, that I thought myself called on to reply to it. But on consulting Sir James Simpson, who had always been my excellent friend, and who was Dr. Bennett's colleague, and sometimes his friend also, his advice was,—'Just take no notice.' So I held my peace, and made no reply. Not so Professor Bennett; for I have heard from several of his students, that he used to make a regular practice of 'pitching into me' in his public lectures for many years. But peace to his ashes! I know not whether he has left any echoes against me on the walls of my Alma Mater.

this peptic influence of the oil is due to its containing some biliary principle, which both favours its divisibility in the process of digestion, and promotes the natural secretions of the liver. The flow of bile, as indicated by the colour of the fæces, is generally free and uniform during its exhibition; and I must not omit to notice another fact, which I believe to be connected with increased activity of the liver. I have in numerous instances remarked that the bulk of the liver (as determined by percussion) becomes augmented during its use, yet without tenderness, or other sign of disorder. In fact this seems to be a kind of useful hypertrophy, induced by the oil increasing the bulk and number of the hepatic cells, and supplying also a material more fitted for this secretion, because it has already within it some elements of biliary matter, which served a similar purpose in the liver of the fish, and this at a lower temperature, and less favourable to the activity of the process. The observation of this influence of cod-liver oil has led me to use it in several cases of functional and structural disease of the liver, marked by defective or depraved secretion; and in some instances with most satisfactory results; especially in one of habitual formation of gall-stones, which had resisted all kinds of treatment, and was rapidly destroying the health: the use of the oil has entirely stopped the attacks and has restored the patient to good health.

'It appears therefore that although other oils might be equally influential in promoting nutrition, and in preventing and removing the cacoplastic and aplastic exudations of scrofulous subjects, the oil from the cod's liver, and perhaps those from the livers of other fish, have the advantage in point of digestibility, and in promoting the action of the digestive and biliary organs.'

The case of recurrent gall-stones, above referred to, was that of a well known dignitary of the Church, and has been noticed in some journal, but I do not remember where. When he came under my care, his health and strength were rapidly declining, under the painful attacks, recurring with increasing frequency, accompanied by jaundice and rapid emaciation. The curative effect of the oil was marvellous and permanent. I heard of his death at a good old age only two or three years ago—full thirty years after that illness.

There have been many other abiding records of the efficacy of this invaluable remedial agent. The sensational exaggerations, attending on its first becoming popular, have subsided; but it has taken the high rank among the means

for strengthening health and resisting disease, which our improving knowledge of these problems assigns to it.

My readers can have hardly failed to perceive that I am a *believer in medicine*. I hold it to be a corollary from this affirmation, that I *disbelieve* in what is called *Homœopathy*. I have not room in these memoirs, to pursue the argument in detail: but I protest, *in limine*, against the fundamental dogmas of the homœopathy of Hahnemann. I. '*Similia similibus medentur*,' or, 'like cures like;' and II. 'Infinitesimal medication,' involving the paradoxical and gratuitous assumption, *that an infinitesimally small* (or any small) *quantity, shall have the reverse of the effect of a large quantity*. So far as I know, both of these, as absolute propositions, are *utterly untrue*.

I. *Like cures like.—Homœopaths tell* us that *thus* cow-pox cures or prevents small-pox; that sulphur, which can produce an eruption like itch, *thus* cures itch. On the contrary, physicians *know* that cow-pox is really the *same* disease as small-pox, but in a milder form; and that vaccination prevents the occurrence of small-pox, (*not by like curing like*, but) by anticipating it, *by producing* the *same* disease in a mild and harmless form.

Physicians *know* also that sulphur cures itch (*not* by causing a new eruption, which it very rarely does, but) by killing the *itch-insect*, which is its true cause.

Other examples adduced by homœopathists to prove that *like cures like*, can be equally set aside by the knowledge of the physician.

II. In 'infinitesimal medication,' I can see nothing but an outrage on common sense. Take it *hypothetically*; how can an increasing negation ever become a positive quality? How can the diminution of a property ever attain an opposite action? How can the large dilution of an agent effect a reversal of its operation? I know that homœopaths give fictile replies to such hypothetical questions; but the examples adduced in these replies, are more logically and simply explained by the physician. But look at the *practical* working of this *infinitesimal medication*, and see if it does not spurn all

control of appreciability through the most delicate tests, and fly into the mystical regions of innumerability and utter vagueness! They pretend indeed to express in numbers their infinitesimal dilutions, and talk flippantly about their billionths and trillionths and decillionths of a grain, as if these were comprehensible numbers, and not mere abstractions of thought, belonging exclusively to the transcendental regions of mathematics and astronomy. To pretend that such practical nonentities are physical agents, capable of controlling the bodily powers in the treatment of disease, is more monstrous than the frauds of mesmerism and magic. If homœopathy has any real agency, it is not physical, but metaphysical, through the mind and imagination, which is wonderfully active in atoning for the failures of all sorts of mockeries of medicine. Then, in defence, rises the fallacious argument of experimental success of homœopathy, attested by a fallible public and by two or three fanciful peers, pacing in the tracks of *post hoc, ergo propter hoc*, and ignoring the beneficent hand of kind Nature, who cures many diseases, in spite of bad treatment, or of no treatment at all. Where statistical comparisons have been carefully made on a large scale, and with strict attention to all conditions, as in the hospitals of Vienna, the mortality has been proved to be much greater under homœopathy, than under legitimate medicine.[1]

It has fallen to my lot to meet with several instances, in which precious time has been lost, and life has been sacrificed, by the patients trusting to Homœopathy in the early treatment of their illness. These remarks will sufficiently explain the following correspondence, which appeared in the Lancet, March 23, 1850.

Dear Sir,—I am very desirous of having your opinion in a case of suspected disease of the heart. The patient is the Hon. Mrs. —— residing at present with Lady ——, —— Square. Will you have the goodness to inform me at what hour on Monday it will be convenient for you to see her?

I think it right to state that Mrs. —— has been for many years a convert to homœopathy, and that I, as you may possibly have

[1] *Homœopathy, its Tenets and Tendencies.* By Sir James Y. Simpson, M.D. and P. F.R.S.E. 1853. See also Dr. Routh's *Fallacies of Homœopathy*, 1852. And Dr. Wood's *Homœopathy Unmasked.*

heard, practise that system of treatment. I mention this as you may have some objection to meet a Homœopathic physician in consultation; and I should much regret if I were the means of inducing you to do anything distasteful to you in ignorance of the above facts. I may however mention that it is as a matter of diagnosis rather than of treatment that your opinion is desired; and that my friends Sir —— —— and Dr. —— have seen the case with me on former occasions.

I remain, dear sir, your very obedient servant, —— ——.

To Charles J. B. Williams, M.D.

(*Reply.*)

7 Holles Street, Cavendish Square: Feb. 1850.

Dear Sir,—I am obliged to you for your courtesy in wishing to have my opinion on the diagnosis of the case of the Hon. Mrs. —— and for your candour in apprising me that she is under homœopathic treatment; but under these circumstances, I must beg you to excuse my attendance.

Believing as I firmly do, that the so-called 'homœopathic system' is an entire fallacy, and therefore calculated to do much injury to those on whom it is practised, I consider it *to be my duty to do nothing that can, directly or indirectly, countenance or aid it*; and it appears to me, that to meet a homœopathic physician in consultation, and to assist in the diagnosis of a case, professedly under homœopathic treatment, would have such an effect.

I need scarcely add that I have no personal feelings in the matter. And hoping that you will soon return to the domain of legitimate medicine, I remain, dear sir, yours faithfully,

C. J. B. Williams.

To Dr. ——

In speaking of Homœopathy, I allude to that of its inventor, Hahnemann, professedly adopted and strictly followed by numerous disciples. We are told now that modern homœopaths no longer hold his characteristic doctrines, either of *similia similibus*, etc. or of *infinitesimal doses*. If so, they are no longer *homœopaths*; and if they retain the title, they deserve to be denounced as *swindlers*, practising and obtaining money under false pretences.

CHAPTER XXIX.

MORE TIME FOR ATTENTION TO FAMILY, ETC. 1851–1852.

Scripture Studies — Education of our Children — Juvenile Amusements. 'World's Fair'—Crystal Palace in Hyde Park—Triumph of Light and Knowledge — Congress of Nations—Patron, the Queen — Prince Albert, Originator and Foremost Representative of Future Progress—Duke of Wellington, Representative of Historical Glory, and of Present Triumph of Duty and Honour. Death of the Duke of Wellington, 1852—Author Summoned—Death before Arrival— Account of his Last Illness—Anecdote —Invitation to Funeral—Procession—Reflections.

ALTHOUGH my time was well occupied with a rapidly increasing practice, my retirement from the trammels of College and Hospital engagements, gave me more liberty in its disposal. Instead of having to hurry off to the lecture after an early breakfast, I could have my leisure repast with my elder sons, and a short time for Scripture reading and prayer, before the arrival of patients. Our Scripture study was that of the Greek Testament, of which I had already made a daily practice for some years; and this was continued during the remainder of my life in London. Conscious that I had not sufficiently mastered Greek in early life, I had always a desire to know it better, not only on account of the beauty and richness of the language, and its aptitude for supplying new words in literature and science, but above all, because it is the language of the inspired Word of Life, and thus may become a key to the most precious of all knowledge. When old enough, my daughters also joined in this study, with occasional assistance of a friend, a good Greek scholar, the Rev. Hugh McSorley, M.A. T.C.D. It is not to be expected that knowledge of Greek, derived from the study of the New Testament only, however prolonged, could be critical or profound; but I can testify that it has enabled me to comprehend the exact mean-

ing of the Sacred Text more fully and satisfactorily than I could from any translation. The Revised Version, I find on the whole a considerable improvement on the old: but it seems to me in many passages to fall short of the fulness of meaning conveyed by a more literal translation of the original; although this may sometimes be difficult to express in English idiom.

In recording the restoration of the fuller enjoyment of family associations consequent on my release from college engagements, and removal to a larger house, I am reminded to say a few words on my children and their education. Of five sons, of ages from fourteen downwards, the three eldest had been sent to preparatory schools, of which Mrs. Bartlett's of Sussex Square, Brighton, and Messrs. Adams and Langtry of the same town, deserve mention. With the eldest, James Thomas, private tuition seemed more suitable than school, as, like his father, he had more taste for tooling and technical matters, than for classical studies; and he was placed with my old patient and friend, the Rev. Charles Bury, at Bonchurch in the Isle of Wight. Later he was sent to the care of Dr. Wagner, a pastor near Stutgardt, where he made good progress in German and French. The second, Charles Theodore, who had done well at school, I sent to Harrow; but after a year of promising study, he had a severe attack of rheumatic fever, which rendered him unfit to return to school; and I placed him, together with his next brother, Harry Samuel, under the able tuition of the Rev. Charles Bradley, of Southgate, the eldest of that well-known family, renowned especially for scholastic eminence. With him they remained for two or three years, to the great improvement of body and mind, until they entered the Universities: Charles at Oxford, Harry at Cambridge. They both passed a creditable career, and graduated with honours. Of the younger sons and daughters I may have occasion to speak later.

It will be easily understood that this increased freedom and opportunity of enjoying the society of my family in their occupations and amusements, was a great improvement on the close college life in Holles Street. Fond as I was of my profession, and finding good cheer and encouragement in the

success with which I pursued it, it was a very charming as well as refreshing change, to have now and then an hour or two of diversion, in a visit with my boys to the Polytechnic, the Botanic, and the Zoological Gardens; and to enjoy the pleasure of watching on their minds the impressions produced by such objects, as used to delight me at their age: and they all had the same taste for natural history and natural science that I had. But there was this difference. They had such an abundance of these sights, in London, and such numbers of books and pictures descriptive of them, that they soon became satiated, and lost their keen relish; whereas I, in my dull country home, was in a state of semi-starvation, from paucity of objects, and scarcity of books. And I think I should have gone right mad, if I could have had a Polytechnic or a Zoological, brought to me at Heytesbury. But probably the poverty of the objects, became the means of driving the mind to greater effort, and the senses to examine more closely and search more deeply; and so not only to find more, but to more fully exercise and strengthen the mind in the search.

In this year, 1851, came the 'World's Fair;' the First Great Exhibition in the Crystal Palace in Hyde Park. This was to be the great feast to all, young and old.

I made a more careful study of this than of those succeeding: they were larger and grander; but this was the *first*, and my impressions from it were stronger: particularly these;—that whilst Britain asserted her superiority in everything relating to mechanics and engineering,[1] her inferiority and

[1] Among the interesting mementoes obtained at the closing of the World's Fair, there was one which deserves mention on account of the curious experience which I had of it during its use. It was a spring bedstead, and I called it my *sympathising bed*. It was very cleverly constructed, of the best materials, and beautifully painted with flowers in enamel, to grace the Exhibition. The spiral springs were not cased in a canvas, but open, supporting the hair mattrass by a light jointed frame. So it formed a charming soft but elastic bed. But I had not slept on it for many nights, before I discovered in it another virtue which I did not anticipate. It was *symphonic*. Whether from toothache or other pain, or even from weariness or want of sleep, I was often in the habit of slightly moaning, as I lay. To my surprise my moans were answered, by a consonant note, from some of the springs of my new bed. Whatever the pitch of the moaning voice, it was answered by the corresponding vibrations of some portions of the metallic coils. So I moaned not alone, but heard a symphonic accompaniment to all my plaints. And I found it soothing, if not

poverty in all objects of taste and decorative art was quite humiliating. This inferiority entirely disappeared in subsequent exhibitions. The British manufacturers learned a great lesson from that first exhibition, and have since accomplished gigantic strides of improvement.

Another triumph, accomplished in that exhibition, excelled any of those which came after,—the triumph of the genius of the scientific naturalist, over the gloomy conceptions of classical architecture. The substitution of Sir Joseph Paxton's crystal roof for the dark ceilings of the architect, was significant of the want of the age, which struggling out of mediæval gloom, was crying for 'More light! more light!'

Besides the objective marvels of this First World's Fair, there was the grand historical fact of the *congress* of all nations, and the personal presence of the foremost representatives of humanity from all quarters of the world to inaugurate the event.[*] Her Most Gracious Majesty the Queen, in opening this exhibition, emblazoned this day as one of the most glorious in Her prosperous reign. Under Her, was an assemblage of the great, in every rank and sphere, who had joined to aid and celebrate this grand step of human progress; but conspicuous above all, stood two most prominent personages whom, brief as this notice is, it is impossible not to name. Prince Albert the Good; who was the first to conceive the bright thought of devising this World's Fair, and in maturing it,—as in forwarding many other beneficent movements,—fulfilled his mission of leading human progress and of advancing the public good. Next stood, Field Marshal Duke of Wellington,—hero of a thousand fights, conqueror of Europe; the Historic Representative of past glory, the personification of the triumph of Duty and Honour.

In little more than a year after this I was summoned to

sympathetic, and beguiling, in the solitude of night watches. The sounds thus produced, are harmonic sounds, in unison, or other concord, with the first sound; and may they not, even mechanically, tend to tranquillise discordant motions and feelings? It would be absurd to associate such coincidental grumblings with the charms of music; but we have not yet fathomed all the relations of vibrations,—musical and other,—with sensation, sleep, and other functions of the nervous system. I was sorry, when I left London, to lose my *symphonic* bed. I left it for an invalid son.

visit this Great Man at Walmer :—but his spirit had fled before I arrived.

On September 14, on calling at my house about 4 P.M. I found the following telegram :—

'SOUTH EASTERN RAILWAY—ELECTRIC TELEGRAPH. LONDON STATION.

At 2.19 P.M., Tuesday, 14th day of Sept. 1852.

Received the following message :—

From	*To*
Name—Lord Charles Wellesley	*Name*—Dr. C. J. B. Williams
Address—Walmer Castle, Deal	*Address*—Late of 7 Holles Street, and now 49 Upper Brook Street, London

Dr. C. J. B. Williams, late of 7 Holles Street, is requested to come to Walmer Castle immediately.

Dispatched from London Office at 3.31 P.M.'

I had never attended the Duke, nor had I any intelligence of his illness: in fact, I could only guess that the message related to him. The only way to 'come immediately,' was to wait for the next train, which was to start at 6 P.M. (I think). Had I taken a special train, it was doubtful that it would arrive sooner, and the message did not seem to warrant my taking that step. There was no message to stop my coming at London Bridge: but on the journey I heard a rumour of the Duke's death. On arriving at Walmer Castle, between 8 and 9, I learnt that His Grace had been dead several hours, I do not now remember how many, but the death must have taken place before I received the message in London.

I heard from Lord Charles Wellesley the particulars of his illness, some of which I will relate, so far as I can remember them. The Duke was in his usual health the day before, Monday; and had driven to Dover to meet a friend who was to arrive by steamer. The packet was behind time; and the Duke walked with Lord Charles on the pier, seemingly quite well; and as usual, plying the men with questions about what they were doing. His sight was so good that he described to Lord Charles what he could see on the French coast, 'where,' Lord Charles added, 'I could see nothing.' (Lord Charles's sight was defective: I saw him afterwards when he became blind, from the disease of which he died.)

The Duke was thus kept waiting; and returned to dinner two hours after his usual time. He was very hungry, and ate hastily and heartily. I am not sure, but I think his valet told me that a meat pie and cold salad formed part of the dinner; and I know that he mentioned that the Duke drank a great deal of water, but not a drop of wine or spirit. In the night he had a severe epileptic fit, to which he was liable; and on recovering, desired his valet to send for Dr. Hulke, his usual medical attendant, who came and administered proper remedies, but I do not remember further particulars. I did not then see Dr. Hulke, but met him after at the funeral. We agreed in attributing the death to the consequences of the violent convulsive attack, brought on by an over-distended stomach. He lived, it is true, to a good old age: but it can hardly be doubted, considering how well he seemed to be the day before, that but for that long and exhausting fast, and the large and hasty meal of cold indigestible food, he might have avoided that attack and lived for a while longer.

The Duke, although a strict disciplinarian, was wayward as a patient, and had Spartan notions against self indulgence of any kind. Dr. Robert Ferguson told me that once the Duke complained to him of his feet getting cold in bed. 'I would advise your Grace,' said Dr. F. 'to have a hot bottle in your bed.' 'Hot bottle! Naw, naw! I *rub 'em*—rub 'em *half-an-hour*.' A good sample of the Iron Duke's endurance as well as natural sagacity. I have proved the benefit of imitating his perseverance: rubbing one's own feet, at first seems a feeble and fatiguing exertion, and with little result: but if you take a leaf out of the Duke's book, and go on rubbing for *half-an-hour*, or even a quarter of an hour, you will surely find not the feet only, but the whole body, in a glow.

In reply to a letter which I wrote to the Marquis of Douro to express my own and my portion of a nation's condolence on our great loss, I received the following:—

3 Upper Belgrave Street: Oct. 17, 1852.

"Sir,—It may be some slight compensation for the anxiety and pain that you must have felt as an Englishman, that you have the assurance that in your skill the utmost confidence was placed.

"Providence willed that we should all be disappointed, and we are left to hope that his mission on earth has been fulfilled.

I have the honour to be, sir, your obedient humble servant,

DOURO."

Dr. Williams.

I learned that I owed the honour of this distinguished, although disappointing, engagement, to the good opinion of my friend the Earl of Clanwilliam, who, occupying Deal Castle, was near neighbour to the Duke.

A few days later I received the following invitation.

Earl Marshal's Office, Parliament Street:
Oct. 28, 1852.

"The Earl Marshal has it in command to invite Dr. Williams to attend in the Proceeding to the Funeral of Field Marshal the Duke of Wellington. Dr. Williams will be accompanied in the same carriage by Dr. Hume and by the Chaplain General of the Forces and the Chaplain of the Tower."

At 8 A.M. on the morning of the Funeral, November 18, by direction, I entered the Park by Buckingham Gate, and joined the procession of the carriages preceding the Funeral Car, and was joined by—not those indicated in the Earl Marshal's letter, but—Dr. Robert Ferguson, (my old friend), and Dr. Hulke.

That procession, its object, its composition—one Illustrious Dead, and thousands of Living Mourners,—the streets and houses crowded by millions, through which it passed,—and the vast solemn edifice, which, serried with figures and furnitures of mourning, received the departed to his last Home—these all formed a scene to be beheld once only in a lifetime, and once seen—never to be forgotten! A mighty nation,—headed by its Beloved Queen,—personally present in crowds of millions, and all other nations of the earth represented by their magnates and ambassadors appointed for the occasion—were assembled to do homage to the memory of One Man, whose corpse was borne before them to the tomb.

Our place in the Cavalcade was favourable for watching the procession through all the stages of its progress, which was from—St. James's Park along the Birdcage Walk—up Constitution Hill to Hyde Park Corner,—Piccadilly,—St. James's

Street,—Pall Mall,—Charing Cross,—Strand,—Fleet Street and Ludgate Hill, to St. Paul's Cathedral.

As the procession was slowly winding up Constitution Hill in sight of Apsley House and the bronze statue on the arch,—the plaintive notes of the Dead March in Saul sounding from between the trees,—we could not but be moved with the thought, that now he was passing for the last time by the way of his habitation at Hyde Park Corner, where, for forty years past, his familiar figure had been so often seen, seeming, as it were, to belong to the place—but henceforwards, 'the place thereof shall know him no more.'

Our position in the Cathedral, was quite in the centre, on the ground floor, close to the funeral car; with a crowd of Kings' sons, Princes, and Ambassadors, behind us, and with the fullest opportunity of seeing and hearing everything. I could not but be grateful and proud of the privilege of taking part in such an event; but not without a humiliating thought of how little I merited the honour.

CHAPTER XXX.

FULL ENGAGEMENT IN PRACTICE. PROFESSIONAL FRIENDS, &c.

1853–1857.

Full private Practice—More at home than in Families. Claims of Authorship—In 'Principles' assisted by Dr. Mann—In 'Diseases of Chest,' assistance promised by Dr. Quain, but not rendered—This work therefore postponed, and never published. Largest Returns from Private Practice—Not in proportion to number of patients; but continued with little abatement nearly 20 years. Heavy Family Expenses—Losses by bad investments. Friends skilful in invention and use of remedies—Mr. James Startin—success in Skin Disease—Sir James Simpson—Enthusiasm and Fertility of invention—Anæsthetics—Inhalation of Carbonic acid gas—Shortened his life by Overwork, but laid hold of, and held forth, the Light of Life—Dr. Richard Bright—Painstaking, Judicious, and Expert, in old and best remedies. Value of Pharmaceutical knowledge—Mr. Peter Squire—Successful in his Preparations and Works—Vegetable Extracts—Chamomile tea—Jacob Bell—Syrian Aid Medical Mission—Pharmaceutical Society and Journal—Patron of Art—Mr. T. H. Hills.

After my establishment in my new residence in Upper Brook Street, my time was chiefly devoted to private practice,—less laborious, and much more remunerative, than College and Hospital work. Morning consultations formed the chief part of the practice; and for these I was at home from 9 till 1, and often detained till 2 or 3 P.M. Many of the patients were sufferers from chest disease, and many were new cases; all requiring lengthened and minute examinations. From twelve to eighteen was the average attendance, which would occupy the whole time; but occasionally the number of patients would rise to twenty, and even twenty-four, which would keep me at home till 3 or 4 o'clock. The visiting practice lay chiefly in consultations with other practitioners, which occupied the time through the rest of the afternoon. I had never a large family practice; and therefore was rarely called out at late or

early hours. The families, who habitually employed me, were a few among the nobility, bankers, merchants and others of the upper ranks of the middle class, who generally were also my intimate friends.

We did not mix much in society. The frequent ill-health of my wife, and the necessity for strict and regular living, which my past trying life had laid on me, interfered with much visiting; and although they deprived me of much social enjoyment, these comparatively recluse habits reserved strength for what were absolutely necessary, professional occupations. And this work included, not only the private practice, to which I have been alluding, but also the duties of authorship. My office as public instructor did not terminate with the release from University College; there was a call from the public for new editions of my published works. The second edition of the Principles of Medicine was issued in 1848. Early in 1853, it was exhausted, and I had immediately to provide for its renewal.[1] But this was no easy matter; involving the necessity of much reading of recent works in physiology and pathology, to bring the information up to the advances of the present day. This I could not do by myself without working at night more than in my state of health, and with fully employed days, would be safe. But I was most glad to find the needed help in my old pupil and friend, Dr. R. J. Mann, himself the successful author of several elementary works in physiology and other branches of science. He zealously undertook, and faithfully fulfilled his task to my great relief and satisfaction. But even with his able assistance, it took me nearly three years to complete this edition, including as it did much original matter, requiring much thought and careful deliberation. On this work I need not dwell longer, having already anticipated the subject in Chap. XXIII.

[1] Princes Street, Soho: Feb. 17, 1853.

My dear Sir,—Since you favoured me with a call, I have had an order from India for 25 copies of your 'Principles of Medicine:' I could only send 11 copies, and have now not one copy on hand. It is a pity such a work should be so long out of print; particularly as it is recommended by several teachers to their classes.

I am,

Yours faithfully,

JOHN CHURCHILL.

Dr. Williams, F.R.S.

A work from my pen on Diseases of the Chest, was another intended undertaking, and the more incumbent on me, as I had promised it to the profession more than ten years before, and the small volume, embracing only a part of the subject, had been also out of print for several years. I had a large amount of material, unpublished, or only partially published, accumulating for this object, and every year added to the stock. But with my increasing engagements, and weight of responsibility in private practice, I rather shrank from undertaking a great new work single-handed, and desired to find some one to join me in it. Dr. Richard Quain had been in the habit of assisting me for several years, not only in his official capacity of House-Physician to the hospital, but also in private practice, when, from pressure of engagements, or from ill-health, I was unable to attend. I had also frequently deputed him to take charge of my patients in my absence, with the understanding, according to my rule, that he should retain the honoraria. He had not been my pupil in the class of Medicine, having followed the Course of Drs. Elliotson and Copland before my appointment; but he was a regular attendant at my clinical lectures, and was quite conversant with my views and practice. He had been recently appointed Assistant Physician in the Hospital at Brompton, which gave him a wide field of experience in diseases of the chest. What then could be more natural and fitting than that I should propose to Dr. Quain to join me in the production of this work on Diseases of the Chest? This I did, also with the understanding that we should be equal participators in the profits. To this he assented with great apparent gratification and good will; and the work was publicly announced in our joint names by Mr. Churchill, as preparing for publication.

Writing for this work now became the occasional occupation of my most leisure hours. It was less pressing than that for the 'Principles,' and could bear waiting. Still I intended steadily to proceed; and had already written upwards of a hundred pages, when I began to question Dr. Quain as to his progress; the answers were not satisfactory. This went on for months and years, without anything forthcoming on his part; and the ultimate result has been, that although he has

continued to be my confidential friend and assistant in practice, to his own advantage, as well as to mine, he has given me no help in this or other literary work. The sequel (I know not if I may say the consequence) of the delinquency was that I soon also ceased to write; and the work has been in abeyance ever since. Such is the fact; and it is not to the credit of my independence, or of my resolution, that, being disappointed of the promised co-operation, I have allowed the fruit of much labour and thought to remain buried and unproductive through the period of upwards of thirty years.

I know not what excuse to make for Dr. Quain. For myself, I can only plead that, being disappointed of his expected co-operation, I began to feel increasing inaptitude for more work than was positively necessary. I had good employment in practice; and felt generally tired enough at the end of each day's work, to make me glad of rest. In fact neither in bodily health, nor in mental vigour, had I recovered from that ten years' strain, which I had struggled through; and friends were continually urging on me that I needed more rest.

And more rest I did take. Postponing for the time the calls for re-publication, or fresh enterprise, I devoted myself entirely to the duties of my large practice, which occupied me from ten to fourteen hours in the day, and brought me a large income, of from four to seven thousand a year. Unfortunately I have mislaid the memoranda of the fullest years; but I know that it never exceeded the latter amount. I had the credit of receiving much more; perhaps from the numbers of patients who consulted me: many of these, however, came only once or twice, and I never saw them again. This kind of practice occupies much time and thought, involves great responsibility, and is by no means remunerative in proportion. I was one of the first to introduce the rule of demanding double fees for first consultations; as justly due for the greater expenditure of time and skill, which they require; and this practice has since become more general; with the result of considerably increasing the incomes of consulting physicians of the present day; but it was not sufficiently adopted in my time to give me its full benefit. Therefore my largest receipts, handsome as they were, did not equal those of fashionable physicians of

olden times, nor of the two or three special favourites of the present day. Doubtless, my practice was much enlarged during the early years of my connection with University College; but for the last two or three years, its heavy duties restricted the further increase; and as soon as I was relieved of these, the augmentation went on rapidly, and did not abate during the succeeding twenty years, until infirm health and advancing age began to tell on me.

It might be expected that so large an income, continuing for so many years, must have made me a rich man: but such was not the case; and although I have always had reason to be thankful for a comfortable competency, circumstances have occurred to withhold anything like great affluence. The expenses of a large family (of whom five were boys) were heavy, and increased with the demands for education. But the greatest cause of limitation of my wealth was *bad investment*; through which I sustained losses, amounting to more than I like to mention. I cannot acquit myself from the charge of imprudence and foolish credulity in these unfortunate transactions, which stamp my conduct, as largely wanting in worldly wisdom.

Although in practice as well as in writing, always endeavouring to pursue a rational method, I was also on the look out for useful knowledge resulting from mere experience, where that was sound and reliable. Much information on the use of medicines, and on the application of remedies, is to be gathered from the medical journals of the period: but I found great advantage of this kind, also from intercourse with a few able men who have a peculiar talent for finding out, and for happily applying, successful methods of treatment. I have already mentioned Sir Charles Locock, as excelling in this knowledge of remedies. Another, whose name I would record, as also that of a dear and valued friend, was Mr. James Startin, whose treatment in his special department, diseases of the skin, was far more successful than that of any other practitioner that I ever knew. His knowledge may not have been very scientific, or based on very exact pathological investigations: but he succeeded in curing aggravated and inveterate forms

of disease, that had baffled many other practitioners. He was the first to introduce the free use of glycerine in medicine; and having traced acne, and other follicular diseases to fatty concretions, he successfully applied oil of turpentine and other essential oils to dissolve and disperse them. He was remarkably ingenious and fertile of resource in the use of caustics, and in small surgical operations; and had for cutaneous affections a variety of pigments, which seemed complicated and unchemical in their composition: yet they were nevertheless efficacious, not only in covering unsightly appearances, but also in soothing and in promoting a healthy action. I could not always equally approve of his internal remedies, some of which were much like those prescribed by Dr. H. Jephson of Leamington, combining tonics with aperients; and I often heard complaints of their disagreement: but I must also add, that they sometimes wrought a cure, where simpler means had failed. Startin had great confidence in my medical skill; and we were warmly attached by mutual obligations in friendly and professional intercourse.

Another dear friend, whose communion used to delight me, also in connection with his earnestness and with the fertility of his resources, was Sir James Simpson, the distinguished Professor at Edinburgh. I did not deserve his friendship at the beginning, for my intimacy with Dr. Evory Kennedy of Dublin, had led me to support him, Dr. Simpson's opponent, in the election to the Professorial Chair. Nevertheless, I heard so much of Dr. Simpson's kindness in the family of my cousin, Archdeacon Williams, and of my youngest brother, with whom he was most intimate, that I could not but welcome him warmly, when he sought me out in his visits to London. And there was something so winning in his simple heartiness, and so charming in his enthusiasm in the progress of our art, that our intercourse was ever after a source of much enjoyment and benefit. At one time he tried to persuade me that it would be to my advantage to exchange my field of action, from London to Edinburgh; and urged that a professorship in the latter university would be preferable to any similar office which London could offer: but with the much scantier prospects of private practice, and more con-

tracted sphere of action, of Edinburgh, I could see nothing in the proposed exchange to tempt a man with a large family, and who had already been overstrained with professorial engagements.

I was always intensely interested in Professor Simpson's anæsthetic discoveries, which I was enabled to announce in the later editions of my 'Principles,' as making an important addition to our therapeutic treasury. We had several discussions about the use of anæsthetics for other purposes, besides that of removing pain ; and on one of the last occasions on which I saw him, when he sent for me to see a patient with him at the Bridge of Allan, he had a number of asthmatics at his house, trying to inhale carbonic acid gas, which he had found, in some cases, to give great relief to the breathing. I cannot say that my trials of this agent have proved successful.[1]

Admirable and beneficent as were the enthusiasm and devotion, which marked the course of this most gifted and amiable man, there can be little doubt that they shortened his life. Under the highest motives he undertook more than he was able to perform, and may be literally said to have died —like not a few others in our arduous profession, prematurely —of over-work. But in his later years, his eager spirit found, and rejoiced in, a Treasure inestimably greater than all his, or any other human discoveries ; and he was enabled to bear witness to its Precious Truths, and to hold forth to men its Divine Light as the greatest of all blessings, for Time and for Eternity. The tract, 'Dead in trespasses and sins,' which he sent me, and several passages in his Biography, by the Rev. Dr. Duns, reveal the higher life of this eminent Christian philosopher and physician, as—'casting down reasonings and every high thing that is exalted against the knowledge of God, and bringing every thought into captivity to the obedience of Christ.'[2]

[1] In connection with this subject I would mention that on calling on Dr. Brown Séquard in Paris last May (1883), he told me, that he had lately proved by experiment, that by introducing carbonic acid gas into the trachea, the sensibility and excito-motory power of the superior laryngeal nerve was quite abolished; and that carbonic acid is therefore the proper anæsthetic for that nerve, and the fittest remedy for all spasmodic and painful affections of the glottis. But the experiment must be difficult, as it was necessary to supply air to the lung by another aperture, lower in the trachea.

[2] 2 Cor. x. 5. *Revised Version.*

Another eminent physician, whom it was my privilege and pleasure often to meet in consultation, was Dr. Richard Bright, whose character commended itself to all by its earnestness and painstaking intelligence. He was a most judicious and expert practitioner, and deservedly gained the full confidence of his patients: but he used to confess himself to be somewhat old-fashioned, and sometimes to twit me good-humouredly about my fondness for new remedies. Yet we were fully agreed in our belief in the utility and safety of the well-approved old ones; against which inexperienced modern writers have been uttering groundless denunciations.

But on my part, I always felt a strong desire to improve our pharmaceutical knowledge, not only by acquisition of new remedies, but also by more exact information of the true modes of operation of the old, and of the best methods of preparing and combining them. And with this view I found the advantage of cultivating the acquaintance of the most intelligent and advanced pharmaceutists, and I feel sure that I profited much by the information which I obtained from them. Foremost among them was my friend, Mr. Peter Squire, to whom British pharmacy is deeply indebted, not only for his standard work, 'Companion to the British Pharmacopœia,' which has gone through fifteen or sixteen editions, and has no equal for amount and exactitude of information,—but also for the success of his work in vegetable pharmacy, particularly in improving the preparation of extracts, so as to preserve their remedial properties. When I first began to practise, I had little faith in vegetable extracts; for they were of doubtful efficacy, and all seemed much alike in their dark treacly aspect and empyreumatic odour: very unlike the herbs from which they were prepared. But when I came to see Squire's extracts, preserving most of the colour, odour, and characteristic taste of the fresh plant, I began to believe in them, and on trial proved their efficacy—that of *Taraxacum*, for example.[1]

[1] My Father, although a parson, had a decided turn for physic; and *dandelion* was one of his favourite remedies for the ailments of a sedentary life. Among the recreations of our boyhood, I might have mentioned the holidays which were sometimes allowed us, for gathering the *flowers of the dandelion*. Many basketsful were collected, and pounded in a stone trough; the expressed

I believe that the improvement consisted chiefly in avoiding a high temperature in concentrating the extract, and promoting evaporation by either diminished pressure, or more simply by an increased current of air. A similar plan is now adopted by most manufacturing druggists. Mr. Squire has been also very successful in improving the taste and action of opium, and of spirits of wine, by eliminating from them an offensive and injurious ingredient; and he has made several valuable suggestions for the improvement of the processes in the National Pharmacopœia. I often resorted to his advice in the choice and combination of my prescriptions with the view to avoid incompatibility and unnecessary nauseousness. Citò, tutò, et *jucundè*, is a motto not to be neglected.

I was very glad to see my old friend this summer enjoying a green old age, yet not losing his faith in physic, albeit of a very simple kind. When I congratulated him on his health and good looks, he told me that he takes every morning a cup of fresh made, but weak, *chamomile tea*.

Jacob Bell was another pharmaceutical friend, whom I often saw; and in fact attended him in his long distressing illness with laryngeal disease, of which he died.[1] He was introduced to me by my much valued friend, Thomas Hodgkin, on the occasion of our meeting with Sir Culling Eardley Smith, and Dr. Conquest, to form the Syrian Aid Medical Mission, when my friend Dr. George Whiteley, since of Cannes and lately deceased, was sent to Beyrout as the first medical missionary. Jacob Bell was not much occupied with the details of Pharmacy; but he took an influential and active part in the formation of the Pharmaceutical Society, and in conducting the Pharmaceutical Journal, both of which have done much to elevate the knowledge of Pharmacy in this country. He was also an enthusiastic and munificent patron of art;

juice, was clarified by a short heating to simmering, and then strained and bottled, with the addition of a little spirit. This was my Father's *Liquor Taraxaci* of sixty years ago; and he thought that a wineglassful in the early morning was of great use to himself and his bilious friends. Sir James Clark had also faith in this simple.

[1] In the earlier part of his illness, the lungs were also extensively affected: but later the disease concentrated itself in the larynx, and the lungs became comparatively clear, showing after death only traces of former disease, in adhesions and granular indurations.

and his valuable bequests of paintings to the nation are well known. He gave me an early proof of the Horse Fair of Rosa Bonheur.

His genial partner and successor Mr. T. H. Hills was another practical pharmaceutist of whom I often took counsel. He is also one always forward in every benevolent professional work.

CHAPTER XXXI.

NEW SYDENHAM SOCIETY. REMINISCENCES OF FRIENDS.

1858–1861.

Formation of New Sydenham Society by Mr. Jonathan Hutchinson and others —Author elected First President—Society to supply translations and editions of modern works as the Old Sydenham did of old—The more needed from the increasing number of Foreign publications—Objects specified—Names of officers—Society now consists of 3,000 members, and has issued 108th volume, besides many Coloured Plates. Old St. George's Friends. Dr. Chambers, Sir Benjamin Brodie, Mr. Cæsar Hawkins, and Mr. H. P. Fuller—His Exertions for rebuilding St. George's Hospital—The Old Building and the Physician's Visit—Fuller's zeal for the Building Fund—Public Dinner with Duke of Wellington presiding—The two palaces of Hyde Park Corner—Mr. T. Hammerton—Mr. Nussey—Noble patients—Countess of Pembroke and Family—Sidney Herbert—His anxieties and trials in public service during the Crimean War—Destructive to his health—His death in 1861—His noble character and achievements. Allusion to Miss Nightingale and her heroism in sickness as in health. Lumleian lectures assigned to Author by Dr. Mayo, President of the College of Physicians. Death of the Prince Consort—Inexpressible loss to the Queen, to the country, to all—Lesson to the pride of our Profession—Message of Condolence from R. Med. Chir. Soc.—Moved by Sir B. Brodie, seconded by the Author.

In the year 1858, I received a visit from Mr. Jonathan Hutchinson, accompanied by Dr. George Johnson, Dr. G. Hilaro Barlow, and other gentlemen, to request me to accept the office of President of the New Sydenham Society which they proposed to form, for the purpose of facilitating the supply of useful medical literature, especially by translations of foreign works, and republications of scattered papers, and of editions out of print, at moderate cost by an annual subscription. The original Sydenham Society had already fulfilled this object for older writings, as those of Sydenham, Harvey, Hewson, and others, and with a satisfactory result: but the promoters of that society had considered their task fulfilled, and dissolved

their body. Mr. Hutchinson and his friends thought that there was yet abundant need for a similar institution for more modern works; and they proposed to establish it under the title of 'The New Sydenham Society.' I fully concurred in the opinion of these gentlemen, and could not but feel honoured by their proposal to place me at the head of it. The increasing number of interesting and important works, issuing from the foreign press, made it most desirable that the best of them should be translated and brought within the reach of English readers. Germany especially was giving abundant evidence of her industry, and was getting ahead of France and England in scientific investigations; yet her language was sealed to the great majority of English readers, myself among the number. I had made many resolutions to learn German, and tried to study the language on the occasions of long journeys to the country, but these attempts proved abortive. I was therefore quite prepared to promote the formation of the New Sydenham Society, from which was issued the following announcement;—

'The Society shall carry out its object by a succession of publications, of which the following shall be the chief:—1. Translations of Foreign Works, Papers, and Essays of merit, to be reproduced as early as practicable after their original issue: 2. British Works, Papers, Lectures, &c., which whilst of great value, have become from any cause difficult to be obtained, excluding those of living authors: 3. Annual Volumes, consisting of reports in Abstract of the progress of different branches of Medical and Surgical science during the year: 4. Dictionaries of Medical Bibliography and Biography.'

The subscription was to be a guinea annually; and the members were to receive four or five volumes each year, according to the number of subscribers. At the first annual meeting this number amounted to 1,820, which in two years increased to 3,000; and the society has continued to flourish ever since.

The Vice-Presidents first appointed included the names of Sir Henry Holland, Dr. (since Sir T.) Watson, Mr. (since Sir Jas.) Paget, Mr. (since Sir W.) Fergusson, Sir Charles Hastings, Sir Jas. L. Bardsley, Dr. (since Sir James) Simpson,

Drs. Ferguson, Mayo, W. Stokes, Acland, Cusack, Macfarlane, and Messrs. Solly, Sands, Cox, and Teale.

The treasurer was Dr. Barlow, and the secretary Mr. Jonathan Hutchinson.

The Council comprised thirty-two distinguished names in London and country.

I took great interest in the proceedings of the Society, and regularly attended its meetings, not only during the two years of my presidency, but for some time after; and can bear testimony to the careful and conscientious manner in which the secretary and members of the Council carried on its work.

Writing, as I now am, at Cannes, I am not able to give any particulars of its recent history; but insert a note, in answer to my inquiry, lately received from my old friend, the Secretary, its original founder and most constant supporter.

15 Cavendish Square, W.: Sept. 18, 1883.

'Dear Dr. Williams,—I believe the New Sydenham Society has now reached its 108th volume; and it still has about 3,000 members.

'I am very glad to know that you have pleasant memories of your labours in its formation. Your advice and help, as our first President, were invaluable to us.

Believe me yours very truly.

JON. HUTCHINSON.'

Besides the number of goodly volumes of the most recent works in medical literature, the Society has issued costly coloured plates of Skin Diseases, and other objects, Year-books of Progress, and a Dictionary of Medical Terms. Nor should I omit to mention, among the benefits resulting from this Society, the profitable employment of the numerous deserving writers, who have assisted, for the most part very creditably, in translating, editing, and annotating, the several publications.

Some years ago, the Council of the New Sydenham Society paid me the compliment of sending me a portfolio with original photographic portraits of the five first Presidents of the Society, including my own, Sir Thomas Watson's, Sir James Paget's, Dr. Stokes', of Dublin, and Mr. Hilton's. I should have been glad to possess one also of the Secretary and Founder, as the most completely identified with the Society.

In my separation from St. George's Hospital I did not lose the interest and good opinion of my friends connected with it, whom I continued to meet in professional and social intercourse.

Dr. Chambers fell into ill health, which compelled his retirement, and soon terminated in his death, after a short and brilliant career, in which this accomplished scholar, able physician, and noble-hearted gentleman, became valued by, and endeared to, many.

Sir Benjamin Brodie was ever my true and faithful friend, and rejoiced in my success, which, he was so kind as to tell me, he had always anticipated. We often had occasion to meet in consultation; and I was indebted to his good opinion for introduction to many patients, and among them, some members of his own family. His memory was wonderful for its power of recalling out of his vast experience, cases similar to those under present consultation; and his well-known practical ability was grounded on a good knowledge of physical and chemical agents, guided by shrewd common sense; albeit tinged with some veneration for remedies used by John Hunter and Sir Everard Home.

Mr. Cæsar Hawkins, with his amiable wife, had been among our earliest and most intimate friends, from the time of our first settling in Half Moon Street, where they also resided. They afterwards removed to the house in Grosvenor Street, formerly occupied by my old friend, Aylmer Bourke Lambert, some time President of the Linnean Society. I had always the highest opinion of Cæsar Hawkins' surgical judgment and skill, and often profited by it for myself and family. In the steady careful exercise of the science and art of his profession, he has attained to its highest eminence, and held its most honourable dignities, and still, one of the few among my contemporaries, survives—the honoured Father of English Surgery.

Among the General Practitioners of the West End fifty years ago, none was better known or respected that Mr. H. P. Fuller, of Piccadilly.[1] He was one of the Visiting Apothecaries

[1] He received the *soubriquet* of 'Mahogany' Fuller, from his having substituted for his open apothecaries' shop, a mahogany front with shutters:—a

of St. George's Hospital; and not limiting his services to the mere inspection of drugs, he busied himself in various ways in improving the Institution, and contributing to its support. Through his exertions mainly, were funds collected, for rebuilding the Hospital as it now stands. When I first visited it, in 1825, it was a very low brick building, with small windows, and a long, sloping, tiled roof; and with a corresponding interior of long, low, ill-lit, and worse ventilated, series of wards. The fields behind, where Belgrave Square now stands, were reedy and damp: little better than a swamp! Yet here John Hunter had studied to heal wounds, and Brodie had struggled on through many sanitary difficulties.

Concerning how some of the physicians did their work, I was told one story, but I do not authenticate it. The Physician, a senior, did not think it necessary to see the patients: but once or twice a week took a seat in the board-room, and summoning the head nurse, heard her account of the patients; wrote and directed what he thought needful, and then took his departure.

The spread of London had afterwards drained and overarched the marshy ground; and then came Fuller and his host, levying their tax on high and low, and neither resting, nor giving rest, until they had raised the funds for rebuilding and furnishing the Hospital on its improved, but not yet perfect scale. I was present at one of the efforts to raise the wind—a dinner at Willis's Rooms, with the opposite neighbour of Hyde Park Corner, the Duke of Wellington, in the chair. His Grace spoke very briefly, but cordially, and right to the purpose; and the collection was liberal.[1]

very creditable representation of a distinction due to a profession above a trade. From sixty to fifty years ago there was no more familiar equipage at the West End than that of Mr. Fuller driving about in his white horsed dark green chariot, out of which, letting down steps with a cord, (before Broughams were known), he would bustle out in his dark-blue coat with gilt buttons, buff waistcoat, and always a glove in his hand. To match, there was his excellent partner, Thomas Hammerton, also with his metal buttoned blue coat, cheery countenance and pleasant Yorkshire brogue, bearing a very high repute for practical skill: and between them, they doctored half the nobility of the West End.

[1] The occasion suggested to me something like a parody on the lines of Byron: 'I stood at Venice on the Bridge of Sighs,' &c.

> I stood at Hyde Park Corner; on each side
> There rose a palace. On the north was one,

Mr. Fuller's zeal for the good of St. George's Hospital was untiring; and he was deservedly rewarded by living to see his son established as one of its physicians, and rising to great usefulness and eminence in the profession. But Dr. Fuller's career was short, for he died in the prime of life, obviously from overwork.

Mr. Nussey, Mr. Tegart, and later, Mr. Illingworth and Mr. John Merriman, were also Visiting Apothecaries of St. George's, with whom I had much friendly and professional intercourse, and I attended members of their families. But they have all passed away with many others, leaving me to marvel at the mercy that has spared me so long.

Nussey was great at the Apothecaries' Hall, having been repeatedly Master of the Worshipful Company. He was also Apothecary to the Royal Household; and was in much esteem among the upper classes of the West End.

In consultation with him, I was long in attendance on that excellent lady the Countess of Pembroke, daughter of Count Woronzow, and mother of the Honourable Sidney Herbert, of the Marchioness of Ailesbury, the Countess Clanwilliam, and the Viscountess de Vesci. During many years I saw much of this noble family and those connected with them. I have many letters from these, and other noble and eminent persons, expressive of satisfaction or appreciation of professional skill and attention; but it would hardly be in good taste to publish them, even assuming that they are not confidential. I have already given expression to my feeling, that what takes place in private practice ought to be sacred; and that when in the interest of science cases are published, names should never be given without express permission.

But it is no breach of confidence to allude to the severe trials of health, both in mind and body, which one of the family just mentioned, Sidney Herbert, had to undergo about

> Raised by a grateful country for th' abode
> Of the Great Hero, who achieved her peace,
> In war triumphant, and in duty true.
> The other was a palace—for the poor,
> The sick, the maimed, the halt, the blind, and such
> As seek for ease from woes of sinful flesh.
> The conqueror comes, the Hospital to aid,
> And spread *new peace*, in Christian love display'd.

this time during the fearful period of the Crimean War, for they were known to the public, and endured in a public service; and I, who attended him during the early part of this time, can bear witness, how he was harassed; as I had to follow him at any hour, from Belgrave Square to the War Office, and from the Office to the House of Commons, &c. when he ought to have been resting in his bed. He was a most reasonable, as well as a noble-hearted man, and in the 'weak piping times of peace,' did, as well as gave, credit to his doctor: but when came the strife of war—and the fearful agonies of *such* a war—with the crushing weight of dread responsibilities, and the shock of awful calamities befalling—can it be wondered at, that physical endurance gave way; and that the power of medicine could be of little avail, even had he been able to persevere with it. So long as he continued under my care, I did my utmost to urge him to withdraw, from some at least, of the burdens which were bearing him down. His retiring from the House of Commons was one step of partial relief, followed by temporary improvement of health. Afterwards, as he showed signs of a new disease, (of which it was presumed that I could know nothing), he fell into other hands, and I did not see him again until I was summoned to his death-bed at Wilton in August, 1861. I shall have occasion to advert to the noble character and achievements of this hero of official life, in extracts from lectures on passages in the sanitary discipline of the army to be given further on, when another celebrated name will appear in the same history, that of Florence Nightingale. On her return from the Crimean War, this heroic lady placed herself under my care, and I had the pleasure and privilege of advising her for several years. As usual, I refrain from making known any details of private history; but I cannot withhold the tribute of my admiration of her patient endurance of suffering, and her self-forgetting devotion to thoughts for the good of others, which persisted in spite of weakness,—as they had triumphed over the opposition and difficulties which she encountered in the years of her activity and health.

In September 1861, Dr. Mayo, then President of the College of Physicians, requested me to deliver the Lumleian

Lectures for the next year. Being very much occupied in practice, I hesitated about undertaking additional work at that time. In a second note he urged me to comply with his request and suggested as a subject, 'An inquiry as to the rationale of the effects of remedies' which had been recommended for consideration by a vote of the Fellows. 'This,' Dr. Mayo added, 'unless modified by more caution than we are liable to exhibit, is very likely to lead to very speculative methods in actual practice. Modified by practical conclusions from the experience of a man like yourself, whom no one will venture to call empirical, these inquiries may be rendered innocuous, and directed into right channels.'

In a few days came the following note, the third on this subject:—

'Dear Dr. Williams,—There is no one, of or about your standing at the College, (or under), who can do such justice to the Lumleian Lectures as you, or who can by the method as well as by the subject matter, so benefit the College in the way which I adverted to in my last note to you. You cannot be at a loss for subject matter; but it is in the method of treating it that I want an example such as you can set. I beg to consider you as having accepted the office.

'Sincerely yours,

'T. Mayo.

'Wimpole Street: Sept. 23.'

I did accept the office, but I did not see my way to adopt the subject which he proposed. 'An inquiry as to the *rationale* of the effects of remedies,' would require an experimental investigation, such as I could not undertake without a hospital, and with so little spare time at my disposal.

The Lumleian Lectures are generally designed to treat on therapeutics, or the art of healing in some aspect; and it occurred to me that my large experience might supply the material for taking stock of our attainments in the healing art, by reviewing our *successes and failures* in various diseases, extending the survey to Preventive, as well as to Curative, Medicine. The subject will be resumed in the notice of the delivery of the lectures in the following year, and of their publication at a later date, when an opportunity will occur of referring to the good deeds of the eminent individuals lately named—Lord Herbert and Miss Nightingale.

Before the year closed another death occurred—spreading a gloom of sorrow through the land—most deep and desolating on our widowed Queen, bereft of the loving Partner of her Life—so wise, so talented, and so good—discreet and gentle councillor of Her Throne—beloved by all. Her sorrow too was shared, and brought a grief in every household home: Albert the Good is gone!

For my part, I felt the stroke as a lesson humiliating to the pride of our profession. I was entering on the momentous subject of *successes* and *failures* in medicine, full of confidence in the great preponderance of success; when here came a *disastrous failure*, in defiance of the most matured experience, and the profoundest skill, with unlimited resources of wealth and comfort. The opprobrium, if any, seemed to lie less in the fatal issue of a disease, little controllable by art, and little resisted by a frame, previously weakened by uncommon anxiety and responsibility; than in the occurrence at all of such a disease—known to take its origin only from filth and corruption, and which might have been prevented by effective measures of Sanitation.

At the Royal Medical and Chirurgical Society, a special meeting was held to draw up a message expressive of the dutiful and profound condolence of the Fellows of the Society with Her Most Gracious Majesty the Queen on the grievous and irreparable loss which her Majesty and the country had sustained in the death of His Royal Highness the Prince Consort. The resolution was moved by Sir Benjamin C. Brodie, Serjeant-Surgeon to Her Majesty, now stricken with blindness; yet when led in, with his former animation, and in his old style of anecdote, he recounted from his personal knowledge, touching instances of the late Prince's intelligence and kindly feeling. I was requested (I understood by Sir B. Brodie's wish) to second the motion, which I did in very few words; because I felt, as all must feel, how impossible it was adequately to contemplate—much more to express—the amount and preciousness of the loss, individual and manifold, present and future, which Her Majesty and the country sustained by this most afflictive bereavement!

CHAPTER XXXII.

HOLIDAY TOURS. 1860–1870.

Relations of Holiday tours to Life and Work—Difficulties in Home Tours from weather, &c. North Wales. Scotland—Lochnagar and Eastern Highlands —Skye—Bute and Arran. Ireland—Glengariffe. Homburg and the Rhine —Tours to Swiss Mountains—Effects of mountain climbing, good and bad —Clothing, shoes, &c.—Tours with Sons—Bernese Oberland—Zermatt —Monte Rosa from Val Anzasca—Monte Moro, a lesson. Tours with Daughters—more suitable for moderate mountaineering—Places named for excursions—Visits to Italian Alps—Val Tournanche and the Matterhorn— St. Theodul Pass—Alpine view from Becca di Nona—Courmayeur. Visit to Pyrenees—Illness at Luchon. Letter in blank verse, descriptive of Tour to Bernese Oberland, Grimsel, Rhone Glacier, and pass of Simplon to Domo d'Ossola—after Storm in Val d'Aosta.

In compiling these 'Memoirs of Life and Work,' it occurs to me that I may fairly include Holiday Tours as belonging to both Life and Work, but the predominance of life over work is necessary to entitle the tour to the epithet, holiday: with labours lighter and a life more free. We hope in a holiday tour not merely to be in vacation, but to enjoy life in a new and amusing way. But to those, who like myself, have to seek refreshment of mind and body, and recruit lost strength, it is very important to make a judicious choice in the direction and management of the tours, and this was not what I was always able to do.

During my connection with University College, I seldom found time enough for a tour on the Continent; but the four or five weeks' holidays were usually passed at Ivy Rock near Chepstow, with short excursions to North Wales, Scotland or Ireland. Of these it may be generally said that they were too much hurried to afford much rest or enjoyment. There was beauty and variety enough in the scenery—each country having its distinctive characters and peculiar charms

—on which, had I more space, I would delight to dwell. But in all of them the traveller is often thwarted by the unpropitious weather which predominates in these British Islands. In Wales and in Scotland he has also to encounter hordes of tourists, which beset the way, crowd up the inns, and tempt the rapacity of natives, ever ready to make the most of their harvest. In Ireland, if the travellers are fewer, the car-drivers and guides are more importunate; and for inexhaustible floods of rain, I know nothing to equal the Wicklow Mountains, and the Lakes of Killarney,—unless it be the Argyllshire Highlands and the Isle of Skye. Of three visits of several days, to the latter, two were spoilt by incessant rain. In a carriage drive from Dingwall to Gairloch, by Kinlochewe and Loch Maree, we had three successive days of combined rain and sunshine —such as I never witnessed before or since—the rain never ceasing, yet the sun almost always shining.

I have not space to describe individual tours; but I will notice only a few passages of the most remarkable, beginning with the earlier excursions in our own country.

In one of our visits to North Wales, two daughters and myself made the ascent of Cader Idris; from the summit of which I made a sketch of the Snowdon range of mountains to the north with the sea and the Isle of Man in the distance. Columnar basaltic rocks rising around a small tarn, made a characteristic foreground. Bad weather prevented our ascent of Snowdon: but I got a good sketch of the mountain from Capel Curig.

In pouring rain a party, including myself, with a son and daughter, ascended Lochnagar, in the Aberdeen Highlands. As we neared the summit, the rain ceased: the clouds cleared away and gave us a splendid view of the whole Cairn Gorm range; with patches of snow on Ben-Muich-Dhui. The Linn of Dee, the Linn of Quoich, and especially the desolate Glen Derry, with its bleaching carcases of contorted pines,—afforded fine objects for sketching, which I executed in neutral tint and sepia.

But the most striking and extraordinary scenery in Scotland, is that of the Isle of Skye, especially Glen Sligachan and the Cuchullin Hills, Loch Scavaig, and the Quiraing. I made

careful panoramic sketches of all these mountains; which although little above 3,000 feet in height, are so perpendicular and rugged, as to vie in grandeur with loftier Alpine heights. Then the Quiraing, a group of rugged and stupendous basaltic steeples—surpassing anything of its kind that I have seen elsewhere—with, by way of contrast, one, flat-levelled into a gigantic table, with a table-cloth of bright green sward!

In short, throughout that strange group of Western Isles, geogenic nature seems to have indulged in the most fantastic freaks of rocky conformation; including Staffa and its Fingal's Cave.

From a hill behind Rothesay, in the Isle of Bute, I found a charming view of the Isle of Arran, with its crest, the Goatfell: in the middle ground, two lakes; one higher, of fresh water, on Bute land itself; the other, lower, a land-locked patch of sea: a nice lesson of perspective, to mark the height of each.

Of all parts of Ireland visited, the most favourable impression was made by Glengariffe, beyond Bantry Bay, both for beauty and scenery, and for its eligibility as a winter residence for invalids. The mildness of its climate is evident from the luxuriance of its myrtles, rhododendrons and other tender shrubs. No doubt rain falls in abundance, as in all parts of Ireland: but its propinquity to the sea, and its drier soil, render it much less damp than Killarney and other inland parts.

Our earlier excursions to the Continent during the holiday, were directed to the Rhine, by the circumstance, that my wife was recommended to resort to Hombourg for the waters, and repeated her visits for several years. The air there is clear and bracing, and the walks and drives in the firwoods pleasant enough. Not less so the early morning music in the Spa Garden; albeit then supported by the gambling tables of the Cursaal. But the change was insufficient. The place was not high enough, often too warm; the air always too much poisoned with tobacco smoke to be refreshing or invigorating. So I gained no good until, with one or two of my sons, I got on to Switzerland, and began to climb the paths, and breathe the air, of the mountains in all its freshness and purity. There was hardly time to do this thoroughly without a longer holiday, and devoting the whole time to the tour.

As my occupations in London gave me little opportunity for walking or horse exercise, not much could be accomplished in this way at the commencement of each tour; but I found the advantage of persevering within moderate limits, with the result of gradually improving breath and strength, until at the end of the time I could manage mountains up to six or seven thousand feet without difficulty. But this was my limit: if I exceeded these heights I became overtired and ill; and had to rest for several days to recover. The fact was plain that I was not in vigorous health, and could bear only moderate amounts of exertion. But the practice of those limited efforts of hill-climbing did good, and brought the health and bodily powers into a better condition than could have been obtained either by rest only, or by more ordinary kinds of exercise in a flat country.

To make the most of a Swiss tour for the purpose of improving health, I found it was best to ride or drive to the mountains; but up and down the mountains, to use one's own legs as much as possible. There is always a great deal of puffing and panting in the steeper ascents—more at first, less afterwards—with breathing at the rate of 40 to 50 in the minute, and with the necessity of frequent halts to get wind; but it is just these quickened and supplementary efforts of the breathing machine, that do good, by fully inflating the air cells,—sweeping out the London smut and dust,—and in brisking the capillary circulation, to the removal of congestions and obstructions, resulting from a close and sedentary life.[1] Then there is the increased heat and perspiration, often profuse, resulting from the arduous efforts; these are not otherwise than beneficial, if judiciously managed, with the proper variation in clothing, in the chills of the mountain heights. In making the ascent, with due consideration of the present weather, it is well to be lightly clad, and even open one's collar freely; but always to have ready against the chills of the heights, and even of halting—not only proper shawls

[1] Of course it is assumed that there is in the mountain climbing tourist no serious unsoundness in heart or lungs to make the exertions hazardous. Yet the recent experience at Davos, proves that even with small amounts of disease, and those not in an active state, regulated mountain exercise is both safe and salutary; but this is only under judicious superintendence.

or wraps, but two or three dry silk handkerchiefs to thrust under the body-clothes, to dry the perspiring skin.

Being rather short of breath from disuse and being out of condition, I found the ascents always arduous; but being strong in the legs, the descents were easy and delightful; and being very surefooted, I seldom found any too steep.

But in the matter of footing, I found reason to adopt a plan of my own, which added greatly to my comfort and security in mountain-climbing. Instead of the heavy, iron-clouted Alpine-boots or shoes, which are not only clumsy, but fatiguing, and very prone to slip on rock and glacier—I wore shoes of stout Indian rubber fabric, with soles thickened and roughened. They may be procured at most of the India-rubber shops. They have a light woollen lining; but for warmth I found it useful to add inner cork soles, with their usual fleecy covering. Of course they are to be worn with thick Shetland, or well knit woollen, socks. The advantages of these India-rubber shoes may be summed up under three heads: 1. Their ease and lightness, never causing sore feet or corns. 2. Their being quite waterproof, and impervious to wet of grass, melting snow, and bog. 3. The safe footing they afford on rocks and glaciers: where iron and hard leather would slip, the caoutchouc clings, like a cat's paw. The only surface on which they are apt to slip, is on a moist clay or earth —of such, the wearer must beware, with alpenstock in hand.

It might be supposed that they would soon wear out, or be cut to pieces by stones and rocks: but their elasticity and toughness gives them such wonderful endurance, that they last where iron and leather wear down and break. One pair has generally served me for two yearly tours.

My early tours in Switzerland were with two of my sons—generally Charles, (since the Doctor) and Harry, (afterwards solicitor); and when they were young in mountaineering, and I could keep pace with them, we made good company, and got on well. Thus we did the Bernese Oberland; including Mürren; the Wengern Alp; the Great and Little Scheideck; Kandersteg, and the Gemmi; the Grimsel and the Glacier of the Rhone: my sons, mostly on foot: self, more commonly on horse or mule back. In after years, we all improved in

climbing; but my sons soon outstripped me; and when, at Zermatt, I found the Riffel and the Gorner Grat enough for my powers, they were content with nothing short of the Cima di Jazi or Monte Rosa.

Another year my climbing ambition met with a lesson, in the attempt to cross the Monte Moro from the Italian side. One of the most lovely and striking sights in the Alps is that of Monte Rosa at sunrise from the Ponte Grande, in lovely Val Anzasca. Rich with festoons of fruit and foliage, the valley lies still in the grey of dawn. At its upper end the mountain mass is seen all white and cold; when suddenly, a tinge of roseate light shines forth from its highest peaks, to glow and spread through its vast expanse of snow, till the whole mount reveals a lovely vision of the light of heaven, gleaming on earthly darkness. But our ascent was from Macugnaga, the mountain-hemmed upper end of Val Anzasca, over the Monte Moro pass, of upwards of 9,000 feet. Grand and soul-stirring as the view was, I was thoroughly beaten before I got down to the desolate valley of Saas, where I was glad to go to bed in the first inn I came to, at the Matt-Mark See, and required the clothes of three beds to make me warm. The next day, still feeling cold and exhausted, I could only walk down to Saas, to wait for my sons, who had been making the ascent of one of the Mischabel-Horner. They became enterprising Alpine climbers; and Harry joined the Alpine Club. I quite understand the attraction of this pursuit; but could never see the wisdom of indulging in it too far, or of gambling with dangers to life and limb for the sake of pleasant excitement.

Dutiful and affectionate as my sons had been, in after tours I found it more suitable to take my daughters, as companions: they were not likely to out-walk me, for they were not strong climbers; but whilst they enjoyed their lower rambles, among the flowers and ferns, I could continue the moderate ascents, which I found to do me so much good. It was thus that we made, in successive years, the following halting places, centres for excursions in the most beautiful scenery, and all within our reach.

Glarus, and the Klonthal and Linthal, with Stachelberg

and the foot of the Tödi. Engelberg, with the Trübsee Alp, and the Joch-pass, under the Titlis; Reichenbach, with Rosenlaui, the Brunig, and the Grimsel. Seelisberg, with its kulm, and the lake and mountains of Uri, the grandest part of Lake Lucerne. On the opposite side, Axenstein and the Fröhn Alp; Thusis and the Via Mala. In the Engadin, Samäden or Silvaplana for residence, with excursions to Morteratsch glacier, Val Roseg, Piz Languard, and the Maloya and Bernina passes. In the Italian Alps, Bormio, with excursions to Santa Caterina, La Scala, and the Stelvio pass.

To describe all we did and saw at these places during our holiday tours, would fill a large volume. But I am tempted to mention two or three other spots, on the Italian side, which are little frequented, and yet present some of the grandest Alpine views that I know. I may remark of these Italian Alps, that they generally enjoy much finer weather than the Swiss Alps; and repeatedly I have been driven to them by the ceaseless rain and cloud of the north.

Chatillon in the Val d'Aosta, is rather too warm for long residence; but from it, you ascend by the Val Tournanche to Breuil, at the south of the Matterhorn, and with new and remarkable aspects of that wonderful mountain cone; loftier than those from Zermatt, as the valley is so much lower. Here I came with my beloved youngest daughter (since gone), and after sleeping at Breuil, with the huge tusk rising above us, to the music of 'the cattle of a thousand hills,' we ascended to the Matterjoch, or Pass of St. Theodul, a height of nearly 11,000 feet, the greatest that I ever accomplished: but it is often crossed by travellers of both sexes. The view is more singular than beautiful, with the great white dome of the Breithorn to the right, and the rocky angular Matterhorn to the left; to the south the snowy peak of the Grivola, or Corne de Cogne, stood forth, a marking feature of the Italian Alps.

From Aosta, with a son, I made the ascent of the Becca di Nona, above 10,000 feet in height, easily accomplished on horseback, and from this obtained the finest southern view of the Alps which I ever saw. The whole Pennine range, from the Mont Blanc in the west to beyond Monte Rosa in the east, stood grandly before us, with the Matterhorn and Monte Rosa

the central objects, in prominent proportions. Panoramic views were sketched on grey paper in Indian ink and white.

I do not recommend Courmayeur, at the upper end of the Val d'Aosta, as a good place for getting views of the Mont Blanc. You are too close under the mountains, which seem to be turning their backs on you; and the Cramont, the mountain opposite, is not high enough, although near 9,000 feet; and moreover very fatiguing to ascend, its turf being steep and slippery, and inaccessible to horses.

I made one tour in the Pyrenees; but not with a happy result; for I was laid up with fever at Bagnères de Luchon for a month, with some doubt for a time as to the issue; by God's mercy, I got through it, under the kind care of Drs. Lambron and Bagnall, but did not recover from the weakness for several months. The roads are excellent in the Pyrenees, and carriages and horses good; but the air is not bracing enough, nor the ground generally high enough, to prove invigorating to pedestrians.

The mountain air in Switzerland often so exhilarated me that I found it difficult to limit the language of my conversation to prose. Being constrained by my companions not to derange the colloquial proprieties by my effusions, they found vent in the following lines, addressed to my youngest daughter on her return to school, after her first visit with me to Switzerland.

> Fan, dearest! can you e'er forget the scenes
> Of varied beauty, which in all degrees
> Of grandeur, sweetness, and sublimity,
> We traversed and enjoyed?—First, floating on
> Thun's azure wave,[1] neath Niesen's towering culm,
> O'ertopped by spotless snow of Blümlis-Alp:
> Next on we track Lütschinen's double stream,—
> The right to rocky walls of Lauterbrun,
> Glistening with Staubach and its echo falls,
> These from the Jungfrau, that from Mürren's heights:—
> The left, or black Lütschine, to Grindelwald,
> O'ertowered by mountain giants, Eiger, Mönch,
> Schreckhorn, and Wetterhorn, down whose dark sides

[1] By steamer from Thun to Interlaken.

The winding glaciers pour their solid flood
Of crevassed ice, with skirt of rough moraine.
Then on, o'er Brientz lake to Reichenbach,
Whose foaming feath'ry sprays were on that night
Illumed by magnesium light of many hues ; [1]
A weird and fairy scene, but too theatrical
For the wild Alps, where Nature ought to reign.
Next day the sky was threatening ; but bright beams
Broke through the clouds, and tempted us to mount
For Rosenlaui's height, with Haslis vale
Fading beneath us, whilst in front there rose,
Looming athwart the mist, the Engelhorn,
And Wellhorn's massive towers : but envious rain
Now poured in torrents and disguised the view ;
Still peered that wondrous icemount, Rosenlaui,
Hiding in clouds its crest, the Wetterhorn :
Yet was its ice so clear and blue, that we
Appeared like spectres in its azure cave :
And coming out, there seemed a sunshine bright : [2]
But no, alas! the rain was pouring still :
So back rode Fanny, dripping down the hill.
Next morning smiled upon us, 'twas of those
When Nature crowns and decks herself with gems
And vesture from her choicest wardrobe's store ;—
When an unclouded heaven pours down bright rays,
And earth respondent mingles hers in air,
Their dazzling softened, but yet, wearing still
A thousand hues of varied loveliness,
Which mark them heav'nborn, albeit tinged on earth :
And like as with two mirrors' magic power,
Thus heaven and earth reciprocally shine,
Receive, reflect, renew, and multiply
The ceaseless beauties of each other's face!
And vain might search the Eye to find a spot
Of blank, deformity, where beauty is not!
Oh! after storms, how such a day delights!

On such a day we crossed the Grimsel pass :
And how we gazed on its stupendous heights,

[1] The Falls of Reichenbach and Giesbach are often illuminated at night with coloured lights.

[2] After the blue light of the ice cavern, the outer light seems yellow like sunshine.

Of massive granite towering o'er our heads!
Or yawning deep in chasm beneath our path;
As where the Aar and silver Aerlenbach
Gush down the Handeck's fall, in deaf'ning roar,
And raise a cloud of iridescent spray.
Nor were the gentle charms of ferns and flowers
Wanting among the rocks, in varied form:
Straw- and blueberries too, to Fanny dear.
But as we mount in Ober Hasli Thal,
The scene grows desolate: the stunted fir
Alone survives the withering hurricane,
That howls at times athwart that savage glen,
O'er tracts of naked granite, ground and grooved
'By ancient glacier action:'—so 'tis *said*;
Yet the same grooves, *I* saw around the sides
Of lofty cliffs, in horizontal lines,
As if from *weather wearing* of the rock.
There, in a vale of rocks, rugged and bare,
Stood Grimsel's Hospice; an unsightly pile,
Welcome to *strangers*.—*I* knew it *too well*,
To breathe its tobacco fumes, or feed its fleas![1]
So o'er the Grimsel-col we sped our way
By Todten-See—name quite appropriate.
This desolation left; now greets our view
The Mayenwand, that sunny slope of flowers,
Cleft by a steep and rugged path. Beneath,
The great Rhone glacier spreads its fan-shaped flood
Of rugged ice, fed by the endless snows
Of lofty Galenstock.—That milky stream,
Gushing from glacial caves and crevasses,
Is infant Rhone, rushing in rapid course
Down its long vale, swelled by the tribute flood,
Of countless rills and torrents from the heights,
Whose snowcapped tops we see in long array
To the far distance, lost in azure haze.
So near this icy cradle of the Rhone,
We slept that night, from fleas and smoking free.

The morrow's sky looked threatening; and the clouds,
Which gathered dark upon the mountain's brow,
Poured down their floods before we entered Viesch:

[1] A former experience at the Grimsel Hospice.

Malapropos! for hence we hoped to mount
The Eggischhorn, and view the vast expanse
Of Aletsch glacier, and its iceberg sea.
So disappointed, on we jogged to Brieg
In an einspänner; for we left our steeds
At Oberwald.
Next day at early dawn,
In the high banquette of a diligence,
We slowly mounted up the Simplon road:
That wondrous work of engineering art,
Which Titan like, seems to invade the skies.
And as each zigzag lifted us aloft,
Leaving the sunlit Valais far beneath
In a faint fairy landscape; watching still,
We hoped to see the giant Alps beyond:
But the great Aletsch, Jungfrau, Eiger, Mönch,
Finster-aar, Viescher-horns,—all still were wrapt
In the dark clouds that hid them yestereen.
But we in sunshine basked;[1] and the deep blue
Of Italy without a fleck, in front
Brightened our scene, and decked the graceful forms
Of Mount Leone and the White Fletschhorn.
Nor do the heavens thus brilliant shine in vain
Upon ungrateful earth: for as we quit
The northern summit, the Kaltwasser bleak,
Passing the Hospice, gain the southern slope,—
The greener verdure, and the flowers more bright,
The trees more varied, and of statelier growth,
The floating butterfly, the lizard brisk,—
All tell the balmy air of Italy.
Yet not all soft and gentle; as we wind
Down to the gorge of Gondo, a deep chasm
In adamantine cliffs of giddy height,
In whose dark depths the struggling road is wrought
By galleries tunnelled through the solid rock;
First one side, then the other; while beneath,
Diveria's torrent roars in ceaseless strife.
Nor is this strife from danger always free,
For mighty storms at times have swollen the flood,
And riven the rocks asunder, swept and crushed
Unlucky travellers in this awful gorge.

[1] A contrast not uncommon in passing from Switzerland to Italy.

Emerge we from it into gentler scenes.
The cliffs, still lofty, open, and let down
The genial sunbeam on each shelf of soil,
Bedecked with flowrets, and with creepers green,
Which hang from rock to rock in festoon'd sprays,
Sparkling with gem-like verdure mid the shade.
And see! pours down that mighty slab of stone
A lovely waterfall—not dashing down
In mad and shapeless torrents, but in streams
Of liquid crystal gliding o'er the rock
And crossing each other in their slanting fall
Trace out a brilliant sheet of trellis-work
Like graceful pattern'd lace of pearly silk.[1]
Isella past, the scene grows richer still,
Tho' interspersed with nature's fiercer forms;
The beetling rock, and over-hanging cliff
Rise fringed and mantled with gigantic trees;
The spreading chestnut, and the stalwart oak,
The spicy walnut, and acacia bright;
And many more; while fruits in clusters hung,
Grapes, Figs, and Melons, with gigantic Gourds
In lavish bounty on each side the road.
'Tis thus the grand and beautiful combine
In sweet Val Vedro, till it opening spreads
In the luxuriant vale of Ossola:
Italian quite! at hand the trellised vines,
In festooned clusters overhang the walls,
Ensconced with shrines and saints in colours gay.
Beyond, the landscape rich with hill and dale,
With villas speckt, and campanilès white,
All blended in harmonious loveliness
By the blue haze of soft Italian air.
Then as we enter Domo d'Ossola,
Antique arcades, porches, and oriels quaint,
And walls with frescoes gay—the country tell.
That eve, (the dinner done, with luscious fruits,
And Asti sparkling,) we strolled up a hill,
By a paved road between the vineyard walls;
With divers chapels on the steep ascent,
For rest, and prayer for pious passers by;
We hoped to see the sunset gild the tops

[1] I learnt afterwards that this fall is called 'Cascade de la Dentelle.'

Of some high Alps, which erewhile were in view
With scattered snow crests: but there intervened
The darkening violet forms of nearer hills,
Which haste the twilight shades. So soon the vale
Changes its lively tints for evening gloom,
Broken by glimmering lamps: while vesper bells
Blend their tones softened with the teeming thrill
Of grasshoppers, which fills the air around.

. . . . . .

VIEW OF THE VAL D'AOSTA FROM THE COL D'ION, AFTER A STORM.

Crossing from Val de Lys to Val d'Aoste,
Two lofty ridges must be scaled: the first
The Ranzola, was wrapt in darkening clouds,
Which welcomed us with rain and biting hail!
Brussone past, the Col d'Ion was reached
In brilliant sunshine; and the scene that burst
On our enchanted sight, transcends the power
Of pen or pencil to portray its beauty!
The height was moderate; 7,000 feet:
But 'neath us lay, far as the eye could reach
The lovely Val d'Aosta, vale of the sun!
For richness, Eden's garden, stored with flowers
And fruits and trees by Nature's lavish hand:
But now by distance blent in azure hues,
Like some vast lake of lapis lazuli,
Fainter as further on the eye surveys,
Until it melts in the blue vault of heaven!
On either side gigantic mountains rise
In long array, and ever varying form;
Their tint a sapphire blue, but on their limbs
And wreathing their snowy summits, still there hang
The relics of the storm, bright fleecy clouds,
Erewhile so dark, but now surpassing snow
In dazzling brilliancy; as if to atone
For the dark veiling gloom they caused before.

To return to practical and utilitarian prose. Thus in successive years, profiting by improving experience, I found these holiday tours truly refreshing and invigorating to body and mind; and I returned to London work with renewed

courage and strength. In later years I made more point of studying the places which we frequented, in relation to their character and capacities for benefiting invalid travellers during the summer months. Some results of these studies were published, first in the 'British Medical Journal,'[1] and afterwards in my son's little book on 'Climate.'[2] I have more in reserve for another volume, if I am spared to publish it.

[1] 'Notes on Alpine Summer Quarters for Invalids,' *Brit. Med. Journ.* Nov. 1869.

[2] 'The Climate of the South of France, &c.' By Charles Theodore Williams, M.A., M.D. 2nd ed. 1870.

CHAPTER XXXIII.

LUMLEIAN LECTURES AT THE ROYAL COLLEGE OF PHYSICIANS, DELIVERED IN 1862; WITH NOTES IN 1872.

Subject—*Sketches of Success and Failure in Medicine*—Designed to set forth Objects of Medicine—Grounds of its Success—Art uncertain: public expect fore-knowledge and success where sometimes unattainable—Overpowering diseases baffle all art—Examples—Making Medicine Failure—Causes of Failure—Intensity of Disease—Errors in Art. Objects of Medicine—Detection, estimation, prevention, cure, or mitigation of Disease—Results in Failure and Success: Grandest Successes in Complete Prevention and Cure. Prevention of Disease Highest Grade of Success—Too little appreciated. Vaccination; Greatest Triumph of Our Art. Disease in British Army—Awful Mortality—Successful Prevention exemplified—Lord Herbert's Royal Commission—Greatest Success in India. Florence Nightingale's Work in Crimea—Her invaluable aid in the Great Sanitary Regeneration of the British Army.

In 1862 I delivered the Lumleian Lectures at the College of Physicians on the subject already mentioned, *Successes and Failures in Medicine*. This was chosen not merely to illustrate from the results of individual experience what the healing art had done, and what it had failed to do; but also to direct attention to the causes of failure, and the grounds of success. With this view, I endeavoured to represent in a tabular form the chief *Causes of Failure of Medicine*, and in another table, epitomising the *Objects of Medicine*, to indicate the means by which these failures are to be avoided, and success in various degrees to be attained. Such a subject, to be treated systematically, would extend far beyond the limits of three Lectures: but it was hoped that by *Sketches*, such an outline might be given as would prove more accurate and instructive, than the vague notions prevalent on these matters, not only among the public but in the profession. No authentic report of these Lectures was published until 1871, when they appeared

in the 'Medical Times and Gazette' with additional notes up to that date.

From these I here insert extracts, which relate chiefly to the Successes and Failures of *Preventive Medicine*; matters interesting and intelligible to the public as well as to the profession. Sketches of Success and Failure in *Curative Medicine*, drawn chiefly from my own practice, I propose to reserve for a second volume, to be devoted to more strictly professional subjects.

SKETCHES OF SUCCESS AND FAILURE IN MEDICINE.

To one long engaged in the practice of Medicine, there are few conclusions more striking than the general one of the uncertainty of the art. His whole career seems to be made up of a series of failures and successes. He may deem himself fortunate if the successes preponderate over the failures, or, at least, if by their magnitude and prominence, they throw these latter into the shade. Of course, much may be said of the imperfections and shortcomings of the art; and more still may be urged on the intractability of disease, and the inevitability of death. It is not to be supposed that we are to make our patients immortal. But it is not unreasonable on the part of the public to expect us to say what we can cure, and what we cannot cure, and to look for results more or less in accordance with our predictions; and it is equally reasonable on our part to point out that although in many instances we can fulfil these expectations, yet in others the powers of health and disease—of life and death—may be so nicely balanced, that it is impossible to predict the result with any certainty. And this candid avowal of failure in our prognostic powers is more safe and more honest than bold guesses at the result, which may be denounced as sheer gambling with the chances of life and death.

In truth, the fair appreciation of success and failure in Medicine will depend much on the intelligence of the community. No doubt, of late years, the public mind has become more enlightened, and can distinguish between organic and functional disease, and will not expect great achievements in the former, where structure and mechanism are extensively injured. But neither the public nor the professional mind is always alive to the equal impotence of Medicine, in those terrible disorders in which a noxious ferment, brewing in the living blood, converts its life-giving stream into a channel of deadly poison, which arrests and perverts the functions, and reduces the whole body to a mass of corruption.

Observe a bad case of malignant scarlatina, from the first

proclaiming the overpowering virulence of its poison. Note the overwhelming languor, headache, and loss of appetite; then the rigor, followed by unequal reaction and abnormal heat, with extreme prostration of body and mind; the pulse, first fluttering and unequal, then frequent, liquid, or thready; the stupor, or muttering delirium, dim eye, dusky rash, dark, congested, and swollen throat, secretions (if any) murky and offensive in the extreme. What is such a case but one of inevitable death? A person plunged into boiling water, or poisoned with a large dose of prussic acid, is not more hopelessly beyond the reach of art. All Medicine there is powerless—all *failure*! And it may be well if two, three, or more of the family are not swept off by the irresistible pestilence.

Look, again, at an instance of unmodified petechial or purpural small-pox, with its livid congestions and blood-oozing tissues, showing the poisoned state of the blood; the eruption copious, but flat-spreading, with no protective margins of fibrin, so that the whole body becomes speedily imbued with the fatal poison, with no power to resist it. Medicine here is all *failure*! The full-blown plague comes like the blast of death itself!

So, too, of cholera and other diseases in their most malignant forms, the destroying force is so strong that the powers of life, and the agents by which we support them, offer little or no resistance. In all such cases Medicine proves a *failure*.

Sometimes, likewise, we find other kinds of disease baffle us by their intensity, their extent, the vitality of the organ attacked, or the destructiveness or malignancy of the morbid process. Thus, severe inflammation attacking vital organs, especially when rapidly proceeding to alteration of structure; organic disease, mechanically or otherwise injuring important functions; and even functional disorders, when intensely affecting a vital organ—as the heart or the medulla—may overmatch our remedial powers, and make Medicine a *failure*.

Causes of Failure in Medicine.

I. From overpowering nature of disease—

- *Structural*, from
  - Extent, Vitality } of part involved.
  - Malignancy.
  - Destructiveness.
- *Functional*, from
  - Intensity.
  - Duration.
  - Vitality of organ { *e.g.*, syncope, shock, tetanus, &c.

Blood-poisoning { Strength of poison. / Defective power of resistance and elimination.

II. From Error in { *Diagnosis.* / *Prognosis.* / *Therapeutics* { Drugs. / Diet. / Regimen.

This table brings before us a classification of the chief causes of failure in Medicine. The first class includes those already noticed, in which the amount or the intensity of the disease exceeds the powers of nature and art to overcome it; and the consideration of this limit to our art may well keep us humble. But, that we may be heedful as well as humble, the table warns us that failure may arise also from errors on our own part, in *diagnosis*, *prognosis*, and in *treatment*. Such errors, although more or less the common lot of humanity, are to be held up as avoidable; and it is our obvious duty to watch and guard against them with all possible vigilance and energy.

Now, in order to avoid as much as possible these causes of *failure*, and to aim at achieving the greatest attainable amount of *success*, it may be profitable to go back to Principles, and survey in the abstract the chief OBJECTS OF MEDICINE. In the fulfilment of these, are comprehended the elements of *success*; and we may hopefully and profitably comment on this side of the picture for our encouragement.

OBJECTS OF MEDICINE.

Preliminary { Diagnosis { Detection and distinction } of disease / Prognosis { Valuation and calculation } of powers of { Health and disease.

Final { Cure / Prevention } of disease.—SUCCESS A. / Mitigation and retardation of disease. / Prolongation and utilisation of life. / Alleviation of suffering. } SUCCESS B.

The preliminary objects of Medicine—the distinction and appreciation of the true nature of disease, and of its relation to the health-force of the body—are of the highest importance to the

scientific Physician, inasmuch as they are generally fundamental to his success in the *final object*, the treatment of disease. Diagnosis is not the mere detection of disease as a name, or a distinct entity; it is such a knowledge as enables one to discern disease in all its characters and bearings, in relation to other diseases, and in relation to the powers of health remaining in the body. Such a knowledge, combined with that supplied from past experience of similar cases, will furnish us with the surest means of prognosticating the result; and further, conjoined with a due acquaintance with the powers of remedial agents, will prove the means of attaining to the *grand final object*, the cure of disease.

So, too, prognosis does not consist in a mere empirical observation of good and bad signs, such as any experienced nurse or shrewd attendant, however ignorant, might exercise with some rude semblance of success. Scientific prognosis is to be founded on a careful valuation and calculation of the relative powers of disease and of health in the system, and, by the light of past experience, estimating and striking the balance between them. It is by such a rational and circumspect procedure, that we may hope to escape those *errors in prognosis and diagnosis*, which we have classed among the causes of *failure in Medicine*.

Proceeding next to the *final objects of Medicine*, obviously the greatest are the COMPLETE CURE AND ENTIRE PREVENTION OF DISEASE,—the substitution of life and health, for disease and death. To accomplish these is to achieve the GRANDEST SUCCESSES of our art. To restore a person from an extreme of suffering and weakness, from frightful disorders of body and mind, from a dangerous struggle with death itself, to a state of ease, health, and strength,—is indeed the best work of the Physician. But he must expect often to divide the credit with nature, or the sound constitution of the patient; and it surely is not less creditable to his sagacity and prudence, if his interference consists mainly in watching for, and promoting, the health-restoring processes of nature, rather than in a random exhibition of empirical remedies. These GREAT SUCCESSES may be looked for in cases of acute disease, fevers, inflammations, and in a large proportion of functional disorders; and they are the more signal, the more intense and aggravated the disease has been.

Such cases are, however, more commonly within the scope of the ordinary family Practitioner than of London Physicians. These, especially the consulting class, have hardly a fair share of curable cases. They are rarely called in till danger is imminent, too often not till hope is past, and disease triumphant; and if they

now and then do get the credit of rescuing a case from impending death, more frequently they have the melancholy office of endorsing a death-warrant, sometimes reserving in their own breasts the secret regret that they had been called in too late. But there is also a secret success that will now and then gladden the heart of the consulting Physician, and give him the inward satisfaction of doing good, although he would fain conceal it from public notice. It is where Medicine has hitherto failed through *error in diagnosis or treatment* (see table of failures), and it is not too late to retrieve the error. The Physician confidentially instructs the previous attendant, alters the treatment, and thereby transfers the case from the list of *failures* to that of *successes*.

It cannot be questioned that the *prevention of disease* deserves to take rank among the NOBLEST AIMS OF MEDICINE, and we may well award the HIGHEST GRADE OF SUCCESS to the signal manner in which the mortality, in certain localities and in certain classes of persons, has been reduced by proper attention to the dictates of sanitary science. The lives thus to be saved may be counted by hundreds and by thousands. Yet how little of individual gratitude does the sanitarian reap from all his beneficent labours! If he, who showed how to draw lightning from the clouds and send it harmless to the earth, was hailed as a public benefactor, not less should those who point out how to stop the risings of the noisome pestilence, whether in the air we breathe, in the water we drink, or in the ground we tread, or to render it comparatively harmless by processes of cleanliness, ventilation, or purification. I lately had occasion to advert to malignant small-pox, as one of the terrible forms, in which a *death-plague* defies the power of art. Honour, then, to the man who found the way to stay that plague; who discovered that the seeds of this very malady, by being transplanted to another soil, might be so mitigated, without destroying their identity—as to produce a trivial and harmless degree of the same disease, which should yet prove a protection against the invasion of the malignant forms! This PREVENTIVE SUCCESS is, indeed, a triumph of our art—perhaps the greatest that it has ever achieved.

Does not, then, the DISCOVERER OF VACCINATION well merit a foremost place of honour? And if we raise in our public forum to the gaze of the admiring multitude, statues of the heroes of a hundred battles, whose good deeds and glories—great as they undoubtedly are—have been achieved through the horrible scenes of the battle-field, amid bloodshed and death, suffering and slaughter, lamentation and woe,—shall we banish into obscurity the image of

OUR IMMORTAL JENNER,[1] whose priceless discovery—whose bloodless victory over disease—has been the means of SAVING MORE LIVES than all that were sacrificed,—and of PREVENTING MORE MISERY than all that was perpetrated,—in the battles of Napoleon, Nelson, and Wellington? To displace the statue of such a BENEFACTOR OF MANKIND is an outrage on humanity and a disgrace to an enlightened age; but, alack! it is too much in keeping with the ignorant and senseless caprices of many of a so-called upper class, who pretend to set up the monstrous absurdities of homœopathy and mesmerism, in opposition to the facts and reasonings of science!

Another example of SIGNAL SUCCESS IN THE PREVENTION OF DISEASE AND DEATH, may be found in the statistical returns of the British army during the last ten years. The writings of Sir John Pringle and others had directed the public attention, a century ago, to the necessity of sanitary regulations for the preservation and efficiency of the lives of soldiers and sailors—men thrown together in large numbers under circumstances in various ways trying to the health; and the well-known fact that the history of our armies generally comprised also the history of various pestilences, which they carry in their train, could not be disputed. Those best acquainted with the details of past sieges and campaigns knew also that the ravages made by these foes within the camp were, often tenfold—nay, more than a hundredfold—greater than those inflicted by the arms of the enemy.

But the destructiveness, not merely of war—but of military life during peace also—was never fully felt, until made known by the searching statistical records, first devised by Sir James MacGrigor, afterwards digested into reports, by Dr. Graham Balfour and Lieutenant (now Major-General Sir A.) Tulloch, and finally extended and completed by the Royal Commission of 1857, of which Lord Herbert was president. Who could have supposed that the annual mortality of the army in this country in time of peace was more than double that of the general male population of the same age?—and, still more, that the Footguards, consisting of picked men, selected for their healthiness and robustness, should annually die off at the rate of 20·4 per thousand, whilst the ordinary mortality does not exceed 9·8? Yet these were disgraceful facts, arising from official carelessness and ignorance through a series of years, until hundreds and thousands of valuable lives were sacrificed, an

[1] Allusion is here made to the statue of Dr. Jenner, which had just been erected in Trafalgar Square, close to the College of Physicians, but was afterwards removed to an obscure site in Kensington Gardens.

incalculable amount of public money wasted, and a stigma of obloquy was cast on a noble branch of the national service. In vain did many of the more intelligent and enlightened Medical officers endeavour to make their representations at head-quarters, why such mortality occurred, and how it could be prevented. In such appeals to those in authority they generally only *got snubbed*, and were told to hold their tongues and mind their own business!

If such were the fatal results of the criminal indifference and ignorance of the governing classes during peace, can we wonder at the harvest of disaster, disease, and death, which resulted in the trying times of war? The horrors of the Crimean campaign are still fresh in our memories. And who is there among us that has not heard of the prominent features of that eventful period which bear on our present subject?—of the unheeded warnings of the Director-General and other experienced Medical men?—of the hasty equipment of the expeditionary force, and its foretaste of suffering from the neglect of sanitary precautions on the voyage, and in the camp before Varna?—of the inadequacy of the supplies for the sick and wounded at Alma?—of the perils and privations of Balaklava, aggravated as they were by desolating storms, intense cold, and still more by the blundering of officials, through which the troops were kept without food and clothing, and were consequently soon decimated by starvation and disease?—of the further ravages of zymotic pestilence in the Crimea and at Scutari, from almost total want of proper sanitary arrangements on board the transports, in the camps, and in the Hospitals?

The amount of mortality from disease alone was something appalling during the first seven months of the Crimean campaign, rising to the rate of 60 per cent. per annum of the whole army—a mortality greater than that of the great plague of London in its population! And observe, all this awful sacrifice of life was from *preventible causes*, as you may judge from the sequel, which will serve us as a present illustration of the *successes* of Medicine.

During the last five months of the Crimean campaign the mortality among the troops did not exceed 11·5 per thousand per annum, which is considerably below the average mortality of the army at home in time of peace. And that this remarkable improvement was really due to better management, and not to increased healthiness of the climate, is obvious, from the fact that at this very period in the contiguous French army, fever and other zymotic diseases were still making fearful ravages.

The reform thus accomplished at last, was brought about through much tribulation. The British nation was aroused to

sympathy and indignation at the sufferings and destruction of its army, denounced by one of the Ministers in the Government, as 'horrible and heartrending.' The public, through the agency of the '*Times* Commissioner,' vied with the now earnest and lavish War Minister, in sending abundant supplies to the Hospitals and to the camp, where the more enlightened Medical officers, now freed from the trammels of red tape and official obstructiveness, and aided and strengthened by able special commissioners,[1] were carrying on their sanitary measures with the vigilant superintendence of that guardian angel of the British army, Miss Nightingale, with her band of devoted assistants. Thus was the residue of the army saved, and the reinforcements sent out were preserved in health and efficiency. So prosperously ended the Crimean campaign.

But where was the security that the lesson thus taught would be remembered any more than those to be learnt from former wars, which had to struggle through similar disasters—those of Walcheren and the Peninsula, for example? There was none; and if no further change had been made in the system, in all probability the results of experience and the dictates of science and common sense would have soon been set aside by the spirit of official obstinacy and military arrogance which would surely prevail in the War Department as hitherto administered.

But, thanks to Sidney Herbert's Royal Commission of 1857,[2] a change was made in the system—the administration of the army has been put on such a footing as to secure a constant attention to sanitary matters in future; and the short period which has since elapsed enables me to record such satisfactory results, both in peace and war, as to fully entitle them to a foremost place among the SUCCESSES OF MEDICINE.

Thus, during the last three years, since the reformed system has been in operation, the annual mortality of the Footguards at home has been reduced from 20 to 9 in 1,000, and that of the infantry of the line from 17·9 to 8·5, and even so low as 5 in Aldershot and Shorncliffe.

[1] Two commissions were sent out to the Crimean army at this date—one respecting supplies for troops and sick, presided over by Sir John MacNeil: the other under Dr. Sutherland, for carrying out sanitary improvements in the hospitals and camps of Scutari and before Sebastopol.

[2] The members of this Royal Commission were—the Right Hon. Sidney Herbert, M.P.; Augustus Stafford, M.P.; Major-General Sir H. Storks; Dr. Andrew Smith, Director-General; Mr. Alexander; Sir J. Phillips; Sir Ranald Martin; and Dr. Sutherland. After the Royal Commission issued its report, several commissions were appointed to give practical effect to its recommendations.

And in proof of the success in war, I will quote a passage from one of Miss Nightingale's summaries :—'The crowning testimony of the great national importance of the new system of sanitary administration inaugurated by Lord Herbert, is to be found in the last Chinese expedition, when his reforms were first practically tested. An expeditionary force was sent to the opposite side of the world, into a hostile country, notorious for its epidemic diseases. Every required arrangement for the preservation of health was made, and with the result that the mortality of this force, including wounded, was little more than three per cent. per annum, whilst the "constantly sick" in Hospital were about the same as at home. Let us contrast this great success with what happened during a former war in China. The 26th Cameronians, a "total abstinence" regiment, and one of the finest and most healthy in the British service, was landed at Chusan 900 strong, and left to its fate without any sanitary care. In two months only twenty men could be got together.'

I claim for Medical science the chief credit in supplying the foundation for these successes; and had the voices of the more enlightened and intelligent Medical officers of the army been listened to long ago, much good might have been done, and much evil averted sooner. But, as before said, these voices were silenced by military despotism and official indifference; and it was not until, strengthened and re-echoed by new and awful experience, they reached the ears, touched the heart, and convinced the understanding, of one high in rank and authority, that they became strong enough to bear down the opposition and obstruction that beset them on every side. Lord Herbert had already considerable experience in War-Office administration, when the disasters of the Crimea occurred and opened his eyes to its utter inefficiency. From that time forward, both in office and out of office, in public and in private, he devoted his whole life and best energies to the examination of the details of every department, to searching out all defects, and to finding and providing adequate remedies. At the head of that before-named Royal Commission of 1857, supported by competent Medical and other advisers conversant with the various subjects to be examined, he summoned the most eminent or best-informed witnesses, and in replies to upwards of ten thousand questions, with voluminous appendices, was amassed an enormous amount of information on all connected topics; the results of which were embodied in a most masterly report, concluding with a series of practical recommendations, which have since been in great measure adopted and carried out with a success exceeding the highest expectations. Prominent among these recommendations was

that to place the Medical officers on a proper footing as guardians of the health of the army, to be consulted and deferred to for the prevention as well as for the cure of disease ; and thus for the first time the Medical service became a power in the army, efficient and successful in some proportion to its dignity and deserts.

This great work Sidney Herbert conscientiously and nobly accomplished ; but, alas ! at the sacrifice of his health and life.

Note added in 1871.—Another great loss, which occurred about the same time, was that of Mr. Alexander, the Director-General, who, with great personal labour, first brought the new sanitary regulations into operation. Happily Lord Herbert's successors, in conjunction with Dr. Sutherland and other surviving members of the Barrack and Hospital Improvement Commission, have continued the arrangements under the authority of the present Army Sanitary Commission, which comprises representatives of the War Office, Royal Engineers, Office of Works, Local Government Act Office, and India Office, together with the Army Medical Department.

The most important field of operation of this Sanitary Commission at present is in India, where it was introduced under the direction of Lord Stanley, now Earl of Derby. Here it has already begun to achieve great successes in the prevention of disease, and bids fair to accomplish still greater triumphs hereafter. An annual report of the measures adopted is now published by the India Board; and the following extract from the last report will serve as a sample of what may be done.

' In the year 1857 Sir Ranald Martin addressed two letters to the Chairman of the Court of Directors, recommending that all British soldiers, available from the duties of the plains, should be permanently cantoned in the hill regions of the country, to diminish the high mortality then prevalent among them—amounting during fifty-six years of this century to 69 per 1,000 per annum. In a letter dated March 27, 1870, alluding to the adoption of Sir R. Martin's recommendation, Dr. Cuningham states that Dr. Bryden had sent in a table showing the results for working parties in the hills during the past seven years.[1] The result is that the death-rate per annum is only just over 4 per 1,000. That the removal to the hill ranges, everywhere to be found throughout India, should reduce the death-rate from 69 to 4 per 1,000 is, indeed, a most patent and wonderful fact. It is the greatest triumph ever achieved

[1] It may, however, be questioned whether the greater salubrity of ' working parties ' may not be in some measure due to their exercise in the open air as well as to the altitude.

over the external causes of disease everywhere prevalent in the plains of Hindostan.'—Report, &c., p. 5.

But there was one other chief agent in the commencement and completion of the great and successful work, (of the Crimean campaign), whose name I cannot pass over, although, being neither Medical, military, nor even masculine, her share in the matter is little known or even suspected.

In all that relates to nursing and providing for the sick army in the East, the name of Florence Nightingale is as a household word; suggestive of devotion so noble, of self sacrifice so chivalrous, that it might seem romantic if it had not been so substantial and practical in its beneficence. But the army and the country owe to Miss Nightingale much more than the devoting of years of day and night toil in watching, nursing, and superintending in the Hospitals and camps of Scutari and the Crimea. With a vigilance untiring, a rare intelligence, and a memory never failing, this gifted lady saw and comprehended all the multitudinous wants and requirements of the army, in Hospital, in camp, and in barrack; in war and in peace, in sickness and in health. She noted the complete failure of the existing system of administration, and how much was necessary to reform it in every department. At the end of the campaign in 1856, when Miss Nightingale returned home with weakened frame and broken health, her Queen and her country were ready to welcome her back to honour and to repose.

But no, Miss Nightingale had a further mission to fulfil; and instead of accepting titles or honours for herself, the boon which she asked was for the issue of that Royal Commission, with Sidney Herbert at its head, which has been the means of bringing about those reforms which she knew to be so much needed. Instead of seeking her own ease and rest after labours almost superhuman, she ceased not to work on for this end, by taking a chief part in suggesting the course of the inquiries, and in obtaining the requisite evidence, in ways and to an extent which her vast experience and knowledge enabled her alone to do.

Well, therefore, may we rank the name of Florence Nightingale with that of Sidney Herbert, foremost among the authors of the great sanitary regeneration of the British army, which has now made it, beyond comparison, the best-provided and the healthiest army in the world.

Note added in 1871.—Miss Nightingale's labours did not cease here: through all the intervening time, in spite of much bodily

suffering and failing strength, numerous proofs of her superior intelligence and experience may be found in the workings and reports of various Government Commissions and public institutions connected with the army, Hospitals, and sanitary science. Even in the last Annual Report of the Progress of Sanitary Measures in India, Miss Nightingale's words of criticism, direction, and encouragement are deservedly brought forward as those of the highest authority and importance.

CHAPTER XXXIV.

FAMILY HISTORY. PERSONAL PROSPECTS. FRIENDS. 1860–1870.

Marriage of Eldest daughter—Notices of other Children. Personal Health and Warnings—Limitation of Prospects—Offices Refused. Need of Representation of the Profession in Parliament. Thomas Wakley as a Journalist—Need of Reform in Hospitals. The *Lancet*—Its objects and early history—Opposition and Support—Author and others prejudiced against it. Mr. Wakley's courtesy—Popularity in House of Commons, attested by several MM.P.—T. S. Duncombe—Hon. H. FitzRoy, &c.—Mr. Wakley's illness—His Gentleness and Geniality—Nature of disease—Retirement abroad necessary, for rest as well as climate—Improvement during winter—Death from accidental hæmorrhage in spring. Entitled to foremost rank as Medical Reformer—Promoter of Improvements of Knowledge and Education—and Advocate of the Interests of the Profession.

In 1862, our eldest daughter, Sophia Janet, was married to the Rev. S. Christopher Morgan, eldest son of the Rev. Samuel Morgan, Vicar of Chepstow. This happy union has been since blessed with six children, three sons and three daughters, the eldest of whom is now 20 years of age. After holding a curacy for a short time in Gloucestershire, my son-in-law has been Vicar, successively, of Aldershot,—of Christ Church, Greenwich,—of Roxeth, Harrow,—and of Swansea, S. Wales. The last important and responsible charge, he has now held seven years; and he has taken his degree of Doctor of Divinity.

These Memoirs are not intended to include details of Family matters, but a brief notice of the history of my other children, will not be irrelevant to that of my own Life.

My eldest son, after a varied course of private tuition in Germany and Geneva, studied for Civil Engineering at King's College, London, and was articled to Mr. H. Conybeare of Abingdon Street, Westminster: (Burkenshaw and Conybeare). After fulfilling the term of pupillage, he was employed by the

same engineer in the construction of railways in Ireland and Wales. Unhappily he fell into ill health which entirely disabled him from active employment, and terminated fatally in November, 1882.

My second son, Charles Theodore, after taking his degree in arts at Oxford, studied Medicine at St. George's Hospital and in Paris. He then took his Doctor's degree at Oxford and became Member of the Royal College of Physicians, London. Showing some signs of delicacy of the chest, he passed two winters in the South of France and Italy, and there personally acquired the local knowledge which supplied the materials of his first little book on Climate, published in 1857. This residence in the South, with other measures, was happily quite successful in re-establishing his health, and he has continued to reside and practise in London ever since.

My third son, Harry Samuel, during part of his time at Cambridge, resided at the Observatory with Professor Challis. In 1861 he was elected scholar of St. John's College, and in 1862 graduated as 22nd Wrangler. He afterwards entered the office of Messrs. Capron & Co., solicitors, of Savile Place, (in which a son of my old friend, Dr. Brabant, was a partner), and in due time he practised as solicitor; during several years in amicable partnership with my old patient and friend, Mr. Owen Alger of Bedford Row.

My fourth son, Arthur David, evinced a great desire to go into the Royal Navy, but, although well instructed by Dr. Burney, he failed to satisfy one of the examiners who required him to go through the multiplication table in French. Through the kindness of a friend he got an appointment as midshipman in the Indian Navy, in which he served two or three years and had some adventures with piratical tribes in the Indian seas. Finding his health beginning to suffer, he gave up the service, returned to London, and entered the office of Messrs. Liddell & Gordon, Civil Engineers, and attached himself to that line of business, in which he has continued ever since.

My youngest son, Ernest Jenkins, suffered early from severe catarrhal attacks, complicated with asthma, and sometimes inflammatory earache, which he thought were aggravated

by cold at one of the schools at which he was pursuing his education. He was afterwards placed under the private tuition of the Rev. C. F. Childe, of Holbrook (formerly my patient), where he was carefully treated and taught. But the ear attacks ended in deafness, which all the kindness and skill of my excellent friends Toynbee, Hinton, and Dolby, successively, failed to remove. One winter he passed at Hyères with my good friend and old patient (*arrested phthisis*), Dr. G. Griffith, with much benefit to his asthmatic affection. The state of his health interfering with all close application, he devoted himself much to Natural History, and passed a year at the Royal Agricultural College at Cirencester, in the study of Scientific Farming. In 1866 he emigrated to Buenos Ayres, and passed two years in the prairies of the Argentine States, wholly occupied in superintending cattle farms, riding wild horses, catching them with the lasso, and other adventurous and invigorating pursuits. He returned much improved in general health and strength; but very little in hearing. Soon after he took a small farm in Shropshire; and succeeded wonderfully in the management of it: but in two or three years his health again began to suffer so much from the climate, that he was obliged to give up the farm, and again go abroad. This he did in a voyage to Teneriffe and the Cape of Good Hope, where he bought a horse and rode through South Africa to Natal, where he passed several months in vigorous health. Returning to this country, he suffered still in bad weather, but much less than formerly. A winter passed in Egypt with his youngest sister; and sometimes accompanying his mother in her visits to the south of France, have contributed to raise his condition above that of an habitual invalid.

Our two youngest daughters, Harriett Amelia, and Fanny Catharine, in their early years were educated at home, with the aid of several governesses in succession, English, French, and German. But their education was chiefly carried on and completed at the well-known and highly valued school of Mrs. Umphelby at Belstead, near Ipswich, where they remained many years. More recently two of my granddaughters have had the advantages of the judicious training of

the same estimable lady. After my daughters leaving school, as may be anticipated, I took good care that they should have further good instruction in drawing, for which they both had remarkable talents. They proved very successful, and became excellent artists; Amelia in landscapes; Fanny in flowers. The latter (whom we have since lost) was also very musical, with a powerful voice (mezzo-soprano, including contralto notes); and her mother secured for her lessons from several eminent teachers. I made a point also of their being well taught in riding, (with a very successful result) as conducive to health as well as to enjoyment. (It is still the favourite exercise of my surviving daughter, who mounts her beautiful chestnut Arab on every possible opportunity, sometimes still accompanied by her aged Father.)

Both our daughters were delicate in health, and at times caused us much anxiety. They both suffered—but in different ways—from the cold of the English climate; and in subsequent winters I deemed it prudent to send them abroad with their mother, who had already found it necessary to avoid the cold and damp of this country.

To pass from family to personal matters. The additional mental labour, caused by the preparation of the Lumleian lectures, was not without an unfavourable effect on my health. Although I had no longer the prostrating attacks of vertigo and swooning, from which I sometimes suffered during the heavy work connected with University College, I often had noises in the ears and head, and sometimes confusion of thought after more than usual mental exertion or anxiety, and a feeling of nervousness and depression, which was not natural. For many—at least twenty—years, I was constantly worried more or less with *tinnitus*—all sorts of noises—in the left ear, the hearing of which was never so good as that of the other: and these noises were always greatly increased under the circumstances of mental fatigue or bodily exhaustion; and diminished by rest and by moderate exercise in the open air. In the latter part of each holiday excursion, and for a month or two after, I was most free from them. I generally disregarded these symptoms, unless very severe;

and then the feeling seemed overwhelming, and compelled quietude. Often too, I suffered from want of sleep; waking at, or soon after midnight, and passing hours of watchfulness—the mind over-active with any distressing or anxious thoughts.[1] I could not but interpret these symptoms as warnings, against undertaking unnecessary work. I therefore postponed the complete publication of the lectures which I had delivered. I refused the Senior Censorship of the College of Physicians, and the office of Harveian Orator; and I replied in the negative to the question whether I would be willing to undertake to deliver the address in Medicine at the meeting of the British Medical Association to be held in London. I was quite conscious that in refusing to avail myself of these opportunities for further distinction, I was abandoning my chance of attaining to the highest honours of the Profession: but I considered the warnings which I had received, of instability of health, a sufficient reason for moderating my ambition, and for limiting my expectations to the realising of an adequate provision from my present lucrative practice, with the hope, at no distant period, to withdraw to the enjoyment of rest, solaced by social blessings and the resources of art and science, and made peaceful and happy in the faithful contemplation of the Finished Work of Grace.

It was in accordance with the view which I had been led to entertain with regard to my future, that in 1867 (I think) when Dr. Murchison and several other Fellows of the College of Physicians asked me to allow my name to be proposed for the office of President, my reply was, that having doubts as to

[1] Various soporifics, and sundry dietetic and regiminal expedients were tried, with variable success: but the most successful remedy for persistent sleeplessness, I found to be a mental one, at the mention of which, I doubt not, many will exclaim—I mean, reading *in bed*. Dispensing with bed-curtains,—with due precautions to make the candle safe, (self-extinguishing, if need be), it should be placed on a pedestal behind the head of the reader, as he lies on his right side, with back to the light, which falls on the book or pamphlet before him; which should be amusing or interesting, but not exciting. My common experience was that thus the mind, gently and pleasantly occupied by subjects, which drive away worrying and wakeful thoughts, becomes calmed—in half an hour or so I begin to feel sleepy—put out the candle, and fall asleep! But I cannot recommend the plan without again emphatically enjoining the proper precautions and limitations in its use.

the state of my health, I could take no active part in the matter; at the same time, if elected, I should not shrink from accepting the honour, or from the endeavour to fulfil the duties of the office. I understood that it was a great relief to Sir James Alderson when he found that I was not likely to be an active opponent. His friends were on the alert, and secured a large majority of votes for his re-election. I do not remember how many votes were recorded for me—perhaps twenty or thirty—but several other Fellows told me, after the election, that they would have voted for me, had they known that my name would be proposed.

I had been still more decided in declining the proposal which had been made to me some years previously by some of the graduates of the University of London, that I should be put in nomination for the representation of that University in Parliament. The position and duties of a Member of Parliament would have been quite incompatible with my necessary occupations. Being then asked to recommend an eligible candidate belonging to our profession, I named Sir Charles Locock, as a competent man;—of liberal politics, and no longer embarrassed with the claims of practice, as he had retired with a large fortune. I gave these gentlemen a letter of introduction to Sir Charles; he entered into negotiation with them, and was declared a candidate, but further arrangements prevented his election.

It is much to be regretted that the Medical Profession is not more adequately represented in Parliament. What is needed is not merely the presence in the House of one or more members who are or have been medical men, and who may occasionally and irregularly speak on subjects connected with the Profession;—but one, well acquainted with the past history and present state of the medical institutions of the country, and who is sufficiently known and respected, to possess the confidence of a large portion,—if not a majority, of the members of the Profession. Such a representative,—always well informed and accurate in his subject, and speaking with corresponding decision and a certain amount of self-assertion,—would always command the attention of the House,

and become somewhat of a power in the State. The only M.P. who seems to me to have ever attained to anything like this position was the late Thomas Wakley. The early part of his career, as a censorious and radical journalist, was very different from that of his later years as a very popular member of Parliament and coroner for the Metropolitan county. The journal,—which he created, and which *made him*,—in spite of its early ribaldries and abusive personalities, was interwoven with a web of truth and justice which gave strength to its attacks and gained the attention and support of the public; notwithstanding the bitter opposition and persecution from old corporations and long-established monopolies brought in array against it. I suppose it is the common lot of radical reformers,—who go to the very *roots* of the evils which they seek to eradicate,—to get some contamination of language and spirit from the foulness and corruption of the dirty soil into which they penetrate. At all events it is very hard for human nature to be set to discover and denounce the delinquencies and abuses of its fellows, without being tempted into censoriousness of spirit and violence of language, which render the work of reform the reverse of gentle or peaceful.

When I first came to London, the 'Lancet' was already a power, which had made itself felt:—relished by the profession at large, which has rather a democratic taste, and hailed as champion of their rights,—received with curious interest by the public, which is alive to anything strong or sensational:—but by the aristocracy of the Profession, including the accused Hospital authorities and Corporations—branded as malignant and revolutionary; and to be opposed in every possible way, private and public. To be suspected of connection with the 'Lancet,' was to be tabooed by societies and respectable bodies; and woe to the student going in for examinations, if he were supposed to have supplied it with reports! Nevertheless the Journal continued to increase in circulation; and no wonder; for over and above the censorious and scurrilous matter, which served for sauce, it supplied useful food for the minds of its readers, in copious medical news and reports of lectures. Wakley showed his ability as an editor, not only in his own slashing and incisive articles in which he attacked

abuses and held up to ridicule and condemnation the inefficiency and neglect of institutions and of their officers, but also in his gathering around him a staff of really clever and well-informed men, who could supply to his pages the most recent knowledge, and guide his councils by the scientific spirit of progress, required by the forward movements of the times.

At St. George's Hospital I was in the anti-'Lancet' camp, and was strongly prejudiced against that journal. In fact I never read it; and all my support and contributions were bespoken by Dr. Macleod, physician of the Hospital, in behalf of the 'London Medical Gazette,' which he edited, and which was said to have been started in opposition to the 'Lancet.' At University College, Mr. Wakley's sons were my pupils, and I soon began to receive from him marks of courtesy and confidence. He placed several members of his family under my care, and he recommended a number of patients to consult me. Among these were several Members of Parliament. They familiarly called him 'Tom Wakley,' and all testified how much he was liked and respected in the House by all parties. Of these Parliamentary friends I recollect particularly Thomas Slingsby Duncombe, his colleague for Finsbury; the Hon. Henry FitzRoy, Mr. Speaker Denison (since Lord Ossington), and the Right Hon. Dr. Lushington.

Mr. T. S. Duncombe, (who also was familiarly known as 'Tom Duncombe') was a great sufferer from habitual asthma—*pulmonary emphysema*, with frequent spasmodic and catarrhal exacerbations. He was an able man and had been a powerful popular orator. I set him up for a time, and he was able to resume Parliamentary duties. But in an English climate there was no chance of escape from relapses, and he would not go abroad. He struggled on for a few years, and before his death fell into the hands of quacks.

The Hon. Henry FitzRoy (son of Lord Southampton), although he had mitral valvular disease of the heart, became so much better after treatment, that he was able to work efficiently as Under Home Secretary several years under Lord Palmerston. He introduced the Sixpence-a-mile Cab Act, and other useful legislative measures; but fell a victim to his

official zeal in superintending the drainage of the Serpentine. He caught intermittent fever; and when I went to see him at Brighton, I found him dying. The damaged heart, although it failed not under the trials of light ordinary work, could not rally from the depressing power of the malarious poison.

I attended Mr. Denison, the Speaker, several years, and also his brother the Bishop of Salisbury. Their nephew, Lord Albert Conyngham (afterwards Lord Londesborough), was also long my patient. A son of Dr. Lushington made a wonderful recovery from a very long illness from deep-seated abscess of the lung.

Although I had these repeated proofs of Mr. Wakley's goodwill towards me, I knew little of him personally, till he consulted me for his own health in the autumn of 1861. I was agreeably surprised with the gentleness and geniality of his manners, and the homely simplicity of his conversation. His ill-health had impaired the vigour of his expression; but there was an earnestness in his look, with an occasional twinkle of his eye, showing forth the workings of energy and of humour in his nature. The hopeful courage and self-confidence, which had borne him up through life against any amount of opposition and difficulty, did not forsake him in the danger which now threatened him. I have not the notes of his case by me; but so far as I can recollect, it was one of inflammatory origin, rather than of tuberculous consumption: but it certainly went on to the formation of cavities, which rendered the prospect of the future very serious: and the more so, as his sanguine temperament and active mind tended to make him impatient of the restrictions necessary for any chance of recovery. These considerations further pressed the expediency of his being sent abroad for the winter, for the sake of seclusion and rest, as well as for the milder climate. In the balmy air and quiet of Madeira he so far improved as to pass the winter fairly without any material increase of disease. His death, which took place in May, was from hæmorrhage, brought on, after a boating excursion, by a fall in landing on the steep sloping beach, (which I remember well, and the difficulties experienced in landing). The occurrence shows that he was still in possession of considerable

activity and strength, and suggests the probability that his ardent temperament was still apt to lead him beyond the bounds of prudence.

Without doubt the works of Thomas Wakley entitle him to the foremost rank as a great Medical Reformer; and the successful results of his labours in correcting abuses and neglects of institutions, and in promoting and improving the means of medical education and diffusion of knowledge, have earned for him the gratitude of the Profession and of the Public. No one has ever so consistently and successfully defended the rights and best interests of the Medical Profession in Parliament, in Courts of Law, and through the Press; and if in his early life, his daring and asperities raised against him a host of enemies, they were mostly pacified, and many converted into friends, in his later years, when the beneficial fruits of his efforts became apparent.

CHAPTER XXXV.

COUNTRY JOURNEYS AND COUNTRY PRACTITIONERS.

Medical attendance from a distance to be considered a luxury rather than necessity, and therefore highly remunerated. Difficulties of long Journeys before Railway times—New Forest—George Tatum of Salisbury—Maurice of Marlborough—Lord and Lady Ailesbury, &c. Journeys to and near Manchester—W. J. Wilson—Dr. Bardsley. Liverpool—Birmingham—Leeds—Torquay, and various other country Journeys and Consultations with local Practitioners. Journeys to sundry Noble Families—Dukes of Bedford and Rutland; Marchioness of Londonderry; Admiral Lord Lyons, &c. During long country journeys, mind ought to rest, in preparation for the special consultation. Unreasonable requisitions for distant visits. Constant Patients and Long Friendships—Hambro Family through three generations. Mr. E. Marjoribanks and Family. Sir James K. Shuttleworth. Dr. R. Ferguson. Absurd notion that physician's skill must be limited to one class of diseases. Instances of health and life sacrificed by persons attempting occupations beyond their powers: Duty of Physicians towards such. Mr. John Stuart Mill, and Lord Lytton—a Contrast.

Journeys to distant places in the country form a noteworthy item in the engagements of London Consulting Physicians, and a considerable amount of this kind of practice fell to my share. Having early through my works obtained some reputation for skill in diagnosis, I was often named by country practitioners when people in affluence required further advice for an object of solicitude, too ill to travel. Highly qualified and able as country practitioners now are, the demand for still more eminent skill, sought from a distance, should be viewed as one of luxury rather than of necessity; and as a rule should be limited to those who can afford to pay liberally for it. The London Physician or Surgeon ought to require a high rate of remuneration, not only to recompense him for his supposed higher skill, and for the time during which he is taken away from his patients at home, but also in justice to the country practitioners, who ought not to be damaged by

the competition of the low fees of consultants coming from a distance. The scale of fees for long journeys has been already mentioned in Chapter XXIV.

The difficulties of some of my early country journeys form a contrast with the facility and speed of those of later years. I think in 1842 I had to visit a patient in the New Forest, Hampshire, to meet my friends, Messrs. Tatum and Moore of Salisbury. The rail was open to Southampton with telegraphic communication to London, and one of the first messages sent was that to summon me for this journey. From Southampton I took a post-chaise through the Forest, but such was the state of the road, that after much floundering through ruts and mud, the chaise got stuck in a hole, and could not be moved. I started off to walk the remaining distance of two or three miles, but in half an hour was overtaken by the chaise, which, by aid of some peasants, had been dragged out of its slough, and I found my friends with the patient awaiting my arrival. The consultation over, I started off hoping to catch the night train from Southampton. But I had not proceeded far, when, on sharply turning a corner, down came the chaise with a crash, from the breaking of a spring. It was getting dark; and we were several miles distant from any place where a conveyance could be procured, and I thought I should have to trudge it on foot; when fortunately a carriage with lights drove up, in which were my friends, Tatum and Moore, posting to Salisbury. I joyfully joined them, and was just in time to catch the mail coach, which joined the rail at Basingstoke: the line to Salisbury being still unfinished. After it was completed, I had many more visits to patients at Salisbury and its neighbourhood, under the care of my good friend George Tatum, brother of my faithful old ally, of Paris and St. George's, Thomas Tatum, who died of paralysis, after lingering several years, with little more than half a life.

Many visits did I make also in North Wilts—meeting my friend Maurice of Marlborough, who had the best practice in that neighbourhood. Several times I had to see the Marquis and Marchioness of Ailesbury at Savernake, in Marlborough Forest, and once their nephew, the present Admiral Earl

Clanwilliam. These visits were very satisfactory and gave me good repute in that country. I ascribe much of their success to the careful and judicious manner in which Maurice entered into my views and carried them out in practice. His brother at Reading was another skilful practitioner, with whom it was always satisfactory to hold consultation. The same may be said of Mr. Ceeley of Aylesbury, to whom we owe the first demonstrative proofs of the identity of smallpox and cowpox.

Early in my career, I was called to consultation in Manchester and its vicinity; and my friend Mr. W. J. Wilson, in large practice there, told me how—without reference to my subsequent successes,—my first visit had made a favourable impression. Not for the purpose of display, but because I really needed them—I was in the habit of bringing with me, not only a stethoscope, but also test-tubes and a few chemical reagents for the examination of the state of the secretions, &c. This has been done as a matter of course in later years: but it was not so forty years ago; and when the shrewd Lancashire manufacturer, to whom I was called,—not ignorant of the value of chemical knowledge,—saw me going through the details of a thorough technical overhauling, and comparing it with the character of former examinations—he exclaimed,—'That's what I call *doing business*!' But I repeat, this practice of thorough and careful scrutiny has long become general: only I was a little *beforehand* with it. Often afterwards I had consultations with the intelligent physicians and surgeons of that great industrial metropolis; and a large *clientèle* from thence found me out in London.[1]

[1] The following note from Sir James Bardsley is an example:—

Manchester: February 23, 1866.

My dear Dr. Williams,—You may probably recollect that in March, 1864, I sent a Greek gentleman to obtain your opinion as to the state of his lungs, and that you agreed with me in opinion that there were no physical or other signs indicative of *tubercular* disease in either lung. Your words were, 'Mr. K. turned up yesterday; and I could find no disease in the lungs. His symptoms have been those of catarrh, from which he is not yet quite free; but there is no reason to doubt that he will soon be so.' I afterwards learnt that Mr. K. was advised to consult our friend, Dr. W., who pronounced his case as one of tubercular Phthisis. This opinion caused his friends great anxiety. I advised Mr. K. to winter in the south of France, and he did so; and he has since then been in the East, and is now in Asia Minor. Mr. K.'s partner in business,

In like manner I had several visits to Liverpool (chiefly in consultation with Dr. Vose): to Birmingham: (meeting Dr. Evans): to Sheffield, (with Dr. Overend): to Leeds, with Messrs. Hey and Teale.[1] I saw several patients of the Dalrymples in Norfolk:—of Dr. Martin, of Rochester:—of Dr. J. A. Martin of Ventnor:—and of Drs. Tetley and Madden, and Evanson, and Mr. Toogood of Torquay:—and of Dr. Symonds of Clifton. I think I twice visited the Dowager Marchioness of Londonderry at Seaham Hall, who was under the care of Dr. Trotter of Sunderland; but her Ladyship had been for some years my patient in London. Two or three times I went to see the Duke of Bedford at Woburn, where I met his brother Lord John Russell, and his wife Lady Fanny, whom I had known in childhood as a daughter of Lord Minto. Lord Russell himself was also for some time under my care in London and at Richmond. I paid a nocturnal visit to the Duke of Rutland in consultation with Dr. Packman; and came away without seeing any of the beauties of Clumber Park.

I have a sad recollection of a visit to Arundel Castle, the seat of the Duke of Norfolk, to see his Father-in-law, Admiral Lord Lyons, who, with his wife, had long been my patients. Lady Lyons was a great sufferer from habitual asthma

Mr. C., happened to call two days ago to consult me about his own health, and on inquiring about my former patient I had the satisfaction to hear that he had lost all chest symptoms, and was in full health. Thus you will perceive the accuracy of your Diagnosis in this case; and it was equally so with respect to the condition of the lungs of a Greek lady, Mrs. Z., who saw you some time ago, at my request. Believe me,

Sincerely yours,

J. L. Bardsley.

[1] One case is worthy of record as showing the importance of attention to what might seem to be a small matter in prescription. A Yorkshire Baronet, of old Roman Catholic family, was very ill, from a fever supposed to have been caused by the effluvia of artificial manures, with which his lands had been dressed. In addition to the local practitioner, he was visited (I think) by Mr. Teale, of Leeds. On arriving I found that large doses of quinine *in pills* had been prescribed, but without beneficial result. On further investigation I ascertained that the pills had passed through him, undissolved. I prescribed the same remedy,—quinine,—*in solution*. From that time amendment began, and ended in speedy and complete recovery. I had attended several of the family before, and afterwards was on friendly terms with their large Catholic connections.

(emphysema), but had greatly benefited under treatment, until they moved to Copenhagen, where Lord Lyons was appointed ambassador to the Danish court. Here her Ladyship was carried off by an attack of bronchitis. The health of Lord Lyons had been greatly tried in the Crimean War, from which he was one of the few who returned with unqualified credit. When still suffering from the weakness, brought on by the fatigues and anxieties of the campaign, he was honoured with the command of the Queen to escort Her Majesty in Her visit to Cherbourg ;—a mark of special approbation and favour, highly prized by the Admiral. But during this voyage he caught a cold, to which, in his loyal anxiety, he did not sufficiently attend : a low inflammation came on, which ended in suppuration and breaking down of the lungs ; and when I first saw him I found him in an advanced and hopeless stage of one of the most rapid forms of galloping consumption.

I could add an abundance more of these reminiscences, which I write simply from recollection : but these are enough to exemplify a department of practice which diversified the routine of professional occupation. These long journeys gave some rest to the brain, except at one time when I tried to devote the hours of travelling to the study of the German language. The attempt often put me to sleep ; and when it did not, it wearied the mind which ought to remain fresh for the coming consultation. I therefore came to the not disagreeable conclusion, that in justice to the patient to be visited, I must read nothing but newspapers and amusing books ; and so keep the mind fresh to the journey's end.

But pleasant as well as profitable as these country journeys generally proved, I sometimes had too much of them. There was a certain noble lady, whom I first saw in consultation with Mr. Thomas Arthur Stone (nephew of dear old Sir Charles Mansfield Clarke, whose name I cannot mention without a grateful tribute to his memory). Her Ladyship, among other eccentricities, used often to insist on our paying a visit twice in each day, when she or her husband was ill. With our busy practice, this was difficult, even when they lived at Putney Heath : but when for a season

they were residing at Brighton and the same demand was made, with the offer of a special train if necessary, to suit our own time,—we had to reply that her Ladyship was asking for impossibilities—so, as a compromise with her importunity, we agreed to go alternately for a few days, instead of both together. Then as on other occasions, when I had to take a special train, the proceeding always struck me as something ludicrous :—the parade of the great engine with its train, its noise and fuss, with steam and smoke,—the flashing of lights and sounding of whistles on its arrival, with the array of guards and porters with their lanterns for reception—the door is opened—and out steps one poor little mortal ! '*Parturiunt montes : nascitur ridiculus mus !*' Absurdity was further heightened on one of these occasions, when Mr. Stone and I, imperiously summoned at midnight, arrived by special train at Brighton at 3 in the morning, having sped from London in an hour. *But there was no carriage in waiting*, and, at that hour, none to be hired. So we had to trudge on foot to the further end of Brighton, a distance of four miles !

Another occasion, on which I found myself overtaxed with long journeys, was in attendance on a patient in Cornwall, not far from the Land's End. His wife (daughter of a nobleman) had been under my care for serious pulmonary disease, and had made a wonderful recovery, which is recorded anonymously in our work on Consumption. He had been for some time under my care in London, where he improved : but since his return to the country his complaint had assumed a serious aspect (renal dropsy). He had been skilfully treated ; but as he did not improve, I was requested to visit him, and although I did not give much hope of the eventual issue of the malady, the lady strongly urged me to repeat my visit two or three times a week. This was quite out of the question, not only as incompatible with my other occupations, but also as unfair to the medical men in the neighbourhood, with whom there was no reason for dissatisfaction. The sequel was, that I paid four visits before the death of the patient, which took place in little more than a month, and my friend Sir W. Gull was also called in two or three times in addition.

After the above sketch of varieties in country journeys, I will conclude this chapter with a notice of a few of the more constant and remarkable of my London patients.

Through three generations I attended the Hambro family, Danish Financiers, and was on terms of close intimacy with Mr. J. Hambro the father, and Baron C. J. Hambro his son. They were first introduced to me by a Danish professor (Otto, I think), and by my excellent friend John Eric Erichsen, also of Danish family, and who, although not my pupil, (having completed his medical education before my time), became like a pupil and effective assistant, often helping me in my work, and afterwards in his successful career as an eminent surgeon, becoming one of the consultants in surgery in whom I had the greatest confidence. I found the senior Hambro suffering from a fit of gout, with his foot in a sheepskin, believing in that and patience as the only remedies; and although they were very slow, not curing in less than six weeks, they were also quite safe, and did not interfere with the natural course of the disease, which he thought a safeguard against other complaints. But he soon found that there were safe means of reducing the fit from six weeks to six days or less, and of further so correcting the gouty constitution, as to prevent the recurrence of the fit for months and even years. He became a ready convert to belief in the treatment of the fit, but was not so readily persuaded to persevere with the proper remedies of diet for the prevention. But we became fast friends; and I enjoyed the confidence of himself during the remainder of his life, and of his son Charles J. Hambro and of his family for many years after. Count Reventlow the Danish ambassador, and other Scandinavian magnates, also became my patients through this connection.

Of the whole circle of my acquaintance I had no patients more confiding, friendly, or more faithful, than the family of Mr. Edward Marjoribanks, senior member of the eminent Banking Firm of Coutts and Co. After a long attendance on Mrs. Marjoribanks in the distressing illness which terminated fatally (disease of the heart and dropsy), I seemed to have gained the confidence of the whole family; and enjoyed their friendship down to the time of my retirement. Miss Maria

Marjoribanks, the eldest unmarried daughter, always proved herself one of my kindest friends, and continued to be under my son's care after my retirement. Her life, of much suffering to herself, but of never-failing kindliness to others, was brought to a close, to the grief of many, last year (1882), during my visit to London.

Sir James Kay-Shuttleworth studied medicine in Edinburgh shortly after my time there, and like me, engaged much in physiological research. He never became a practical physician: but engaged in works and inquiries connected with education and sanitation. Having married an heiress, it was not necessary for him to practise his profession: and not confident in his own practical skill, he frequently consulted me on the subject of his own health and on that of his family. I have reason to think that the result proved satisfactory; particularly as regarded the health of his children. In some way he had been led into a plan, which might be called *vegetarian*, for the diet of children, together with too much restriction in modes and habits of exercise. The children did not thrive as he expected, but were pallid, thin, nervous, and growing in height more than in breadth or strength. After a little explanation and discussion, Sir James quite entered into my views,—to carry out a plan of generous and varied, but regulated nutrition, with as much enlivening and invigorating exercise in the open air as strength, weather, and due attention to the cultivation of the mind, would permit. The change for the better was soon remarkable, and after two or three years, I saw no more of them: but I understand that they grew up healthy young men, and I have since seen public mention of some of their names as useful members of society.

I have already had occasion to mention the name of Dr. Robert Ferguson in connection with that of the Duke of Wellington. It so happened that several others of his noble patients came into my charge, at a time when he was inclining to withdraw from practice. Among these may be mentioned the Duke and Duchess of Buccleuch, and their son Lord Henry Scott, Frances, Marchioness of Londonderry and Lady Clinton.

When in acknowledgment of Dr. Ferguson's congratula-

tions that my 'name was up' for chest complaints, I qualified my expression of satisfaction by adding, that I did not like to be credited only with knowledge of specialties: and that I was anxious that it should be known that I had fully studied and written on other subjects besides chest complaints: he replied: 'My dear Williams, there is no reason for you to be anxious about anything, but *to cure your patients.*' This was complimentary and sensible advice, if not quite to the point; and it did not reconcile me to the absurdly capricious judgments in which some persons, chiefly of the titled class, indulge,—that a doctor can be clever on only one subject. More liberal and reasonable was the conduct of Lady Wharncliffe, who, after having witnessed my treatment of Lord Wharncliffe's case, albeit hopelessly unsuccessful in the end (from overwhelming lung-disease), did not hesitate to entrust me with the care of her daughter, who was suffering from a complaint quite unconnected with the chest. And happily the ultimate result was successful, but after a long period of anxiety and peril.

I must say that I found it a relief, to have sometimes the charge of cases of maladies, other than those of the chest. Often their treatment is easier and less tedious, and for the most part, more successful. And it is pleasant and cheering to have to do with patients who soon get well and dismiss you with a blessing, instead of those who linger long in anxiety and doubt, or worse still, are stamped with the doom of mortal disease. But happily, as for the patient, so for the doctor,—there is balm for all his woes; and grace and comfort for all the issues of life, or of death.—'Thou shalt keep him in perfect peace whose mind is stayed on Thee, because he trusteth in Thee.'

It is a profitable as well as pleasant lesson to recall in a life, the memory of good works done by those who are themselves under sickness and suffering. The life of one of my patients, Miss Laura Oldfield, was wonderfully prolonged during many years, notwithstanding the existence of extensive and incurable organic disease of the lungs. In fact in a bodily sense her life was reduced to less than half its normal capacity. There was less than half the lung left for breathing,

which was more like that of a reptile, than of a warm-blooded mammal. Yet this lady continued, by writing and directions, to act as secretary and superintendent of a beneficent society for the relief of the sick and infirm poor, during several years. Much as we must admire the heroism and loveliness of such extraordinary self-sacrifice,—as physicians, we cannot approve of it; for we feel ourselves called on to inculcate as a primary duty, the due care and preservation of that life which the Author of our being has entrusted to the charge of each. If He sends sickness and weakness which incapacitate for the duties of health, it is as a message to possess our souls in patience—biding His time—in the use of permitted means—for the restoration of our powers and their duties.

I have known many instances—and have some in my thoughts whom I could name, but this is not necessary—of ladies who have undertaken offices and occupations which were beyond their strength, and, in some examples, not suitable to female capacities. One has undertaken to form and to superintend a religious Sisterhood, to be devoted to services of high ritual and a programme of good works. Impelled by enthusiastic feelings, more sensational than rational, and more conventional than natural, she devises a code of regulations and duties, the fulfilment of which makes great demands on the bodily and mental powers. The plan attracts many of like æsthetic tastes, who prefer gorgeous ceremonials and church ordinances to simplicity of worship and spiritual service. So the lady became superior of a large Sisterhood, with a multiplicity of duties and a weight of responsibility, which, however gratifying to ambition and flattering to self-righteousness, must sorely try a conscientious mind and bear down a not over vigorous body. And so it proved. In a few years I found her quite broken down in health and strength.

Another young lady of strong ardent mind and health good, except in being occasionally subject to spasmodic asthma, undertook to make herself useful in society by establishing and conducting a business, to be carried on by women. The enterprise was for a time successful: but at the sacrifice of the lady's health, who soon became an habitual asthmatic.

I will conclude this chapter by a brief notice of two distinguished men who were for a time my patients, and who as patients, as well as in the prominent features of their nature and characters, formed a striking contrast with each other.

John Stuart Mill during several years came occasionally to see me at my morning consultations. It is unnecessary to allude to the nature of his ailments. For a man so noted in his writings for profundity of thought and grasp of intellect, his usual conversation was remarkable for its plainness and simplicity. Rather reserved in disposition, he rarely diverged from the object of his visit, which he stated sensibly but concisely, and rather required to be drawn out by questions. But he was always an attentive listener, and what is more, a confiding, conformable, patient; reasonable in his expectations, and intelligently acquiescent in receiving explanations and directions. I need hardly say that I felt it a pleasure as well as an honour to possess the confidence of such a man, the profundity of whose intellect did not impair the amiability of his character. He thought himself generally benefited under my treatment: but he resided much in the south of France and I did not see him in the last two or three years of his life.

Lord Lytton was a genius of a totally different order, with a great predominance of imagination over the reasoning faculties. With a mind of great capacity and activity, trained by high culture, and largely enriched by foreign travel and intercourse with the world, he had become a prolific writer in various departments of literature, and not more prolific than successful. As poet, historian, dramatist, writer of fiction, and politician—his works had charmed the public, and had raised him to the highest ranks of authorship.

When I visited him at his residence in Park Lane, even on entrance at the outer door, I began to find myself in an atmosphere of perfume—or rather of *perfume*, mixed with *tobacco-fume*. On proceeding further through a long corridor and anteroom, the fume waxed stronger, and on entrance to the presence chamber or divan, at the further end, through a haze of smoke, loomed his lordship's figure, wrapt in an Oriental dressing robe with coloured Fez, and half reclined upon an ottoman. Polished in manner, and most courteous

in address, he charmed me with his talk; but when I proceeded to question him and enter into his case, his account of himself was so mixed up with crotchets and fancies, that I found it hard to get at the simple truth, and still more difficult to enlighten him and bring him round to my way of thinking. With the ardour and versatility of genius, he had studied all systems of medicine, legitimate and illegitimate; but with a strange mixture of German scepticism and Oriental credulity, almost amounting to superstition, he had persevered in no definite plan of treatment, unless his habit of indulgence in perpetual smoking could be considered as such. As his complaints included a decided asthmatic complication, I tried to persuade him (as giving it up was hopeless) at least to *improve* his habit of smoking, by substituting for a portion of his beloved tobacco—stramonium, belladonna or Indian hemp,—and so get more of their antispasmodic effect, and less of the pernicious influence of the tobacco on the heart and stomach. But, as in other cases of habitual *intoxication* with tobacco, I doubt that my arguments were of much avail, or that he derived any material benefit from the three or four visits which I paid him. This chapter has already exceeded the usual bounds, and I will add no more, but I hope that I may find a future opportunity of relieving my mind by a '*counterblast*' against the pernicious effects of *tobacco*, with which I feel it charged.

CHAPTER XXXVI.

TRIAL FOR LIBEL. HUNTER *v.* 'PALL MALL GAZETTE.' 1866.

British avidity for Quackery and irregular Medicine. Dr. Hunter's pamphlet and advertisements—Pretensions to Science—Disparagement of medical practice—Deceptions and extortions denounced in 'Pall Mall Gazette'—Action for libel—Author summoned as witness for Defence—Review of Pamphlet—Gross errors in Pathology and Therapeutics—Unfounded assumptions—Alarming exaggerations—Trial—Evidence of Author—Consumption not from imperfect breathing—No excess of carbon in tubercle—Carbon inert—Other errors of Plaintiff—Inefficiency of his inhalations—Action of cod oil through circulation—Use of Inhalations common—Plaintiff's process produces no oxygen—Curability of Consumption—Catarrh not necessarily leading to Consumption—Imperfect breathing different from air re-breathed—Possible evils from inhaling oxygen—Former experiences of respiring oxygen. Increasing success in modern treatment of Consumption. Other witnesses examined. Concluding addresses and summing up. Verdict—One farthing Damages. Remarks on Counsel and Judge. Obligations due to Proprietor of 'Pall Mall Gazette.'

A CONSIDERABLE proportion of the British public seems to have a decided appetite for quackery. They read with avidity the numerous specious advertisements in the public press, which also finds them profitable, not only in the payments of the advertisers, but also in the gratification thus afforded to their quackery-loving readers; and the more sensational the cases, and marvellous the announcement of cure, the greater will be the fascination. In the years 1865 and 1866 a whole column of the 'Times' and of other popular journals, was often occupied by large extracts from the pamphlet of a Dr. Robert Hunter, setting forth new and startling statements respecting the prevalence, and insidious approaches of *consumption*; the total failure of medical science to ascertain its nature, or to find its remedy:—then the announcement of Dr. Hunter's discoveries as fulfilling both objects,—professing to have detected its nature, and promising confidently to effect its cure. Then

these pretensions were garnished by a specious display of chemical terms, and, by a reference to distinguished chemical authorities, well devised to deceive the ignorant. No well-informed medical man could be thus deluded: but Dr. Hunter specially warns his readers against the whole profession, as prejudiced, as well as incompetent. Eventually his advertisements attracted a great many patients, and he had establishments for carrying on his method of treatment in Scotland and Ireland as well as in London.

It was not long before I heard more of this pretender from patients who had consulted him, and it was by no means to his advantage. Only one of these thought he found some temporary benefit from the inhalations; some got no good, and others became worse: but all complained of the charges, which were a guinea for the first consultation, and 5*l.* per month afterwards.[1] It was the spirit of extortion thus manifested, taking advantage of the alarms of deluded patients, together with the combined craft and ignorance discovered in the pretended invention, that aroused the indignant feelings of an independent journalist, who publicly denounced the offender in no measured terms in the pages of the 'Pall Mall Gazette;' and describing his advertisements as fallacious and unprincipled, full of false and exaggerated statements, calculated to terrorise the public, to discredit medical practice in general, and to puff off his own vaunted remedies, which were really as destitute of efficacy as they were the outcome of ignorance and error,—concluded by strongly warning the public against the whole concern.

Dr. Hunter could not do otherwise than bring an action for libel, against the responsible publisher of the 'Pall Mall Gazette,' who undertook to defend the action, pleading 'not

[1] This is a high charge for a class of cases which are chiefly chronic, and do not require frequent visits. Setting aside acute cases, or serious aggravations, where more constant attendance is necessary, I seldom saw my consumptive patients, after one or two first visits, more frequently than once a month; and often much less frequently. I daresay other physicians can echo my experience when I mention further that many times have I been brought prescriptions of mine, dated many years before, which have been in constant use ever since, without the patient having paid a second visit. In such cases the druggist has drawn a much larger profit than the physician. But the latter has his reward in the abiding faith of the unseen patient.

guilty, and further, that the alleged libel was true in substance and in fact.'

Together with several other London Physicians, I was summoned as witness for the defence; and although such an engagement in a Court of Law was far from agreeable, involving both anxiety and responsibility, and occupying much time, I did not shrink from what seemed to be a plain public duty, to support a public-spirited journal in a righteous endeavour to expose fraud and ignorance, and to uphold the dignity and interests of the Medical Profession.

It would occupy too much space to give the details of the trial, which were copiously reported by the journals of the period: and I shall chiefly confine myself to the part which I took in it. The pamphlet of Dr. Hunter, extracts from which formed the substance of the numerous advertisements appearing in the daily and weekly newspapers,—was a curious compound of pretension and ignorance. He professed that he had discovered that tubercles, the cause of consumption, consisted of matter with an excess of carbon, resulting from inadequacy in the respiration to supply oxygen sufficient to carry it off. In support of the notion of the excess of carbon in tubercle, he quotes the analysis of Scherer, who found in tubercle nearly 54 per cent. of carbon: but Dr. Hunter overlooks the same chemist's analysis of protein and other animal principles, which contain nearly 56 per cent. carbon; actually more than tubercle—so that Scherer is against him. Under the same erroneous notion that tubercles arise from defective respiration, he ascribes the power of bronchitis to produce them, to its impeding respiration: overlooking the well-known fact that other disorders which impede respiration, more, and for a longer time, than bronchitis, are remarkably exempt from the formation of tubercles. Thus asthma, spasmodic or habitual, malformations of the heart, and distortions of the spine, all of which greatly interfere with the oxygenation of the blood, seem in some measure incompatible with a tuberculous tendency.

Dr. Hunter's notions in *pathology* thus proving so erroneous, nothing more satisfactory is to be found in his *therapeutics*, or means of cure. They are described in the pam

phlet too vaguely to be intelligible or practicable by another medical man: but much efficacy is ascribed to the use of remedies by inhalation, and especially those which are said to supply oxygen: but no explanation was given how this was to be accomplished, nor directions for carrying out the plan. Thus the method of treatment vaunted as being so much more successful than any other, was kept secret and confined to the practice of Dr. Hunter and his assistants.

The extensive prevalence of the disease, proving fatal to one-fourth of the adult population—the insidiousness of its approach with few premonitory symptoms—are dwelt on in exaggerated and alarming terms, and the fearful description winds up with a solemn warning against all ordinary methods of cure, which are denounced as irrational and ineffectual.

On the assumption that the disease in consumption is local, confined to the lungs, Dr. Hunter maintains that remedies ought to be directed at once to the lungs; and on the assumption that tubercle, the cause of consumption, is deleterious through its containing an excess of carbon—he insists that the proper method of treatment is by the inhalation of air or vapours with an increased supply of oxygen. Medical men know well that both these assumptions are contrary to facts; abundant evidence to that effect came out in the trial.

On the 27th of November, 1866, in the Court of Queen's Bench, the Lord Chief Justice (Cockburn), with a special jury, had before him the case of Hunter *v.* Sharpe, an action for libel against the 'Pall Mall Gazette.' The defendant pleaded 'not guilty; and further, that the alleged libel was true in substance and in fact.' Mr. Coleridge, Q.C., Mr. Serjeant Ballantine, and Mr. Hume Williams were counsel for the plaintiff; Mr. Karslake, Q.C. and Mr. Fitzjames Stephen were counsel for the defendant.

Mr. Coleridge stated the plaintiff's case to the jury, handed in the libel, and called as witnesses,—the plaintiff, Robert Hunter, M.D. of the University of New York, and Licentiate of the Medical Board of New York;—Dr. Melville, M.D. Edinburgh; and Dr. McGregor, M.D. Edinburgh; assistants of Dr. Hunter; and six persons, who had been Dr. Hunter's patients. After these respectively had given their evidence and had

been cross-examined, Mr. Karslake addressed the jury for the defence, and then, on the third day of the trial, called, as first witness :—

(*Taken principally from the Report in the 'Lancet.'*)

Dr. Williams, F.R.S., F.R.C.P., Senior Consulting Physician to the Brompton Hospital for Consumption, who stated that he had paid particular attention to diseases of the lungs, and had read Dr. Hunter's book, which contained, he said, many exaggerations and misstatements. The statement in the book that consumption arose entirely from imperfect respiration was as much opposed to the truth, as a statement could well be. It was a remarkable fact that many of the diseases in which respiration was most imperfect were unusually free from tubercular deposition. The subjects of habitual asthma were nearly always free from tubercle ; the same remark also would apply to spasmodic asthma. There was a similar class of cases connected with malformations and disease of the heart, in which there was imperfect respiration and yet no tubercles. In cases of great distortion of the spine there was often very imperfect respiration, yet in these tubercle was very uncommon. Again, the statement in Dr. Hunter's book that carbon was a poison, inimical to health, and that it was the source of consumption, was entirely erroneous. Carbon was the same as charcoal, a remarkably inert substance ; and was often formed in the lung tissue in considerable quantities without doing any harm. And the statement that it is the true cause of tubercle was unwarranted assumption. Dr. Hunter appealed to chemical analysis to prove the large amount of carbon in tubercle ; but its proportion, 54 per cent., was not greater than in other animal matters. Other constituents of the blood and of the body contained as much, and even more, carbon. There were other statements entirely contrary to fact. The statement that catarrh leads to consumption generally, was a gross exaggeration. It could not be denied that catarrh might develop the disease in persons predisposed to it. But in a common cold there was a liability to cough and an increase of the pulse ; and many persons were subject to nervous cough from accidental causes, and also to quickening of pulse. The statement as to mischief in the lungs being undoubtedly indicated by a 'hacking cough, with slight shortness of breath, especially if associated with an acceleration of 10 to 15 beats per minute of the pulse, etc.,' was absurd.

The Lord Chief Justice said the whole passage should be looked at, not isolated expressions.

The entire passage was read :—

'In consumption the pulse keeps pace with the shortness of breath. In health the pulse should range from 60 to 68, the average being about 64 beats in a minute. If therefore you have a hacking cough and slight shortness of breath on exertion, accompanied by an increase in the frequency of the pulse of 10 or 15 beats per minute, you cannot doubt the existence of mischief in the lungs, and should instantly set about its removal.'

The witness stated that he had perused the entire chapter, and indeed the whole work, and his opinion was that the passage read was erroneous, and that the general tendency of the work was unduly to alarm the public, and that it contained many statements grossly exaggerated, if not entirely unfounded. His attention was then directed to another passage :—

'We do not always find apparent loss of flesh in the first stage of consumption. In young women particularly I have very often found the lungs severely affected, while they still retained their colour and plumpness. But, as a rule, if we reduce the matter to a certainty by weighing, we shall find a few pounds of difference between their present and their former weight. If, with the loss of weight, there is a disposition to sigh, a dark discolouration below the eyes and a quickened pulse, with some heat in the hands, set it down as almost certain that the lungs are affected.'

The witness stated that though there was some degree of truth in the first sentence, the latter part of the passage was very erroneous, and calculated to produce a false and alarming impression. The symptoms described were often met with in cases where there was no such affection of the lungs. His attention was then pointed to a passage in which it was stated :—

'The weekly bills of mortality point us to the startling fact that of those who have passed the age of puberty, fully one in every four persons we meet with in the great thoroughfares of business and pleasure, is under the ban of this terrible disease, and destined to fall a sacrifice to it unless saved through the prompt adoption of more rational means than those usually employed.'

The witness stated that he considered this to be a gross exaggeration and far too alarming. He was then asked as to a passage which ran thus :—

'From these facts the reader can understand that one of the great objects of treatment is to subdue the catarrhal condition of the mucous membrane. How can this be accomplished ? It is no treatment for a local disease in the lungs, to pour down cod-liver oil and tonics into the stomach, for they never reach the parts

affected; and, besides, such medicines possess no properties capable of effecting cure, if they did. No physician will pretend that cod-liver oil, or any cough mixture, or any tonic ever compounded, has power to remove tubercle, purify the blood, or heal the mucous membrane, even if directly applied. How, then, in the name of reason, can they accomplish these objects when they are applied to a distant and healthy part?'

The witness said this was entirely erroneous in both fact and reasoning. There was abundant evidence that such medicines did reach the lungs and every part of the body where the blood circulated.

The Lord Chief Justice.—Then, you would say that cod-liver oil had a beneficial action upon the lungs by the oily matter being brought into immediate contact with every part of the lungs?

Witness.—As one mode of action, but it has other modes of operation:—in generally promoting nutrition, for instance?

The Lord Chief Justice.—In other words, you think that if the lungs could be got at locally, it would do good to apply the oil to their surface?

Witness.—Well, that I should doubt. It is through the blood that it is believed to effect good, because the deposit and changes of tubercle depend upon the circulation of the blood in every part of the lungs; and it is in the blood thus circulating, that the oil acts, and is believed to be very beneficial. The witness then had his attention drawn to a passage in an essay prefixed by the plaintiff to his book:—

'The conclusion is that pulmonary complaints are curable, even after they have reached a compound stage, when treated by properly regulated, and adapted inhalations of oxygenated and medicated vapours; and I cannot but regard it as a contribution to medical science of inestimable importance to mankind, and one destined to exert a more beneficial influence on the practice of medicine than any discovery of modern times.'

The witness stated that he had been for 30 years in the habit of using inhalation in such cases, and that it had been used in the Brompton Hospital for many years. It was no novelty, but was common in his own practice, and he believed in that of many of his brethren. He regarded it as a valuable auxiliary, but as subordinate to the use of medicines taken into the stomach in the ordinary way. Inhalation, he said, was transient in its effects; and though, no doubt, the substance inhaled reached the air-passages, and even the blood, it was in such minute quantities that the effect was not enduring. Inhalations too were uncertain in their operation.

Sometimes they would produce little or no effect, and sometimes, on the contrary, strong, and even baneful effects; so that they required to be administered with great care, and with personal supervision of the patient: and their beneficial operation, at the best, was limited, because transient. Take, for instance, asthma, the disease in which it might be supposed likely to be useful: although the inhalation of stramonium for its cure had been long known, indeed it was in common use all over the world, yet it was transient in its operation; whereas that same drug when administered through the stomach, was far more beneficial in its effects. In fact, the profession, having long been acquainted with inhalation, and having tried it with all kinds of drugs and in all kinds of cases and in all kinds of ways, had concluded that it was neither so very efficacious, or permanent in its operation, as was at first expected, and therefore they assigned it less importance than Dr. Hunter claimed for it. Asked as to the modes of inhalation, he stated that, though he had tried inhaling instruments, he had not found them so efficacious as the more simple mode of putting the matter to be inhaled in a jug of very hot water, throwing a cloth over the head while held over it—the result of which was that the patient inhaled with ease by both nose and mouth. As to the plaintiff's 'inhaler' he had found it impossible to make out what it was. Neither his instrument, nor his method was described in his book. The witness was then directed to the passage in which the plaintiff described his system:—

'The medicines which it is necessary for the patient to inhale are of four kinds—first, expectorants, to expel the mucus; second, sedatives, to allay irritation; third, astringents, to diminish secretion; and fourth, alteratives, to change the action of the diseased membrane.'

He was asked whether he could collect from this the plaintiff's system, so as to understand distinctly what it was, and he declared that he could not; it was so utterly vague and indefinite as to the drugs to be used, their proportions and combination, or the means employed for inhalation. And this remark he applied to the book as a whole. There was nothing in it which was sufficiently clear and definite to enable a medical man to understand the treatment and to apply it. He found in particular no directions which would guide any one in the administration of oxygen; nor indeed up to this moment could witness collect, even from the plaintiff's evidence, *that he ever really administered oxygen at all.* The process described by the plaintiff, was, he believed, one that would not really disengage free oxygen. Chloric acid, which the plaintiff said

he used, would no doubt, if decomposed, give out oxygen and chlorine; but if these were inhaled together, the chlorine would be such an irritant to the lungs, as to prevent inhalation being continued; and if they were mixed with other substances, then these would absorb the oxygen; so that in either case no free oxygen would be inhaled at all, and the process was useless. In some cases, he said, the real inhalation of oxygen would be dangerous in pulmonary disease for reasons which he explained. Consumption always comprised a tendency to inflammations, of which bronchitis was one, and the effect of oxygen being to increase the stimulating effect of the air on the lungs, he should fear its effects in increasing the tendency to inflammation. So far, therefore, from thinking as the plaintiff stated in his book, that the great thing in every case was to inhale oxygen, it would be in many cases extremely injurious; and so far from the received modes of treatment by regular practitioners having failed, as the plaintiff represented, to diminish the mortality by consumption, he stated that the plaintiff's estimate of the mortality was most exaggerated, and that the average duration of the disease now was five years, whereas it used to be two.

Mr. Coleridge in cross-examination.—Do you consider consumption curable or not?—I consider it curable in certain forms and degrees.

The Lord Chief Justice.—In what forms and degrees?—In the incipient stage, or when the disease is limited in extent.

Mr. Coleridge.—Beyond that it is incurable?—When it is extensive and far advanced, no doubt it is incurable.

Then it is all the more important to treat it as early as possible?—Certainly, provided it exists. (A laugh.) But it is all the more important to treat for it as soon as it is suspected to exist?—Yes, no doubt.

The witness was then challenged upon his opinion as to a passage in which the plaintiff stated, 'All observation and experience unite to prove that the root of the malady is in the lungs, and that tubercles are but the fruit of imperfect respiration;' and he repeated that this was as untrue as any statement could possibly be. He was then asked as to another passage—'Tuberculous deposits are the invariable results of insufficient performance of the respiratory function and rebreathed air;' and he was asked whether this proposition was as false as the other; and if not where was the difference. The witness pointed out that the distinction was, that in the one case there was the mere imperfection of respiration; whereas in the other—the latter passage—there was a further corruption caused by the air having already passed through the lungs. The

witness was then told that the latter proposition was from Dr. MacCormac's work on consumption, and he said he did not altogether dispute it. There might however, he added, be imperfect respiration without consumption, and he quite denied that consumption always had for its cause, imperfect respiration. There was, he said, no evidence that imperfect respiration caused or preceded the deposit of tubercle, though of course after consumption had gone on respiration would often be interfered with: consumption, however, was often found without previous imperfect respiration. He also declared it to be a total mistake to state that the cause of consumption was the absence of oxygen or the excess of carbon in the blood, and the passage stating that carbon retained and not sufficiently discharged was 'deposited as tubercle' was quite incorrect. The cause of consumption might be in the unhealthy condition of various functions of the body; respiration was only one of them; but it was utterly incorrect to represent absence of oxygen or imperfection of respiration as the sole cause. The insufficiency of oxygen, no doubt, might be one of several co-operating causes, leading to that deteriorated state of the system which resulted in consumption. Air which had been breathed or respired was positively pernicious. Asked whether oxygenation of the blood was not of great importance and went on in the lungs, he said of course it was; but the oxygen, to be beneficial, would be absorbed into the blood, and pass through the whole system, thus rendering all the functions of the body active by its presence. He denied the proposition of the plaintiff that consumption is only the consequence of a carbonaceous condition of the blood.

Mr. Coleridge.—What do you consider the cause of consumption?

Dr. Williams.—A degraded condition of the material of the blood; that is, such a deteriorated condition of it that it no longer makes good flesh.

Mr. Coleridge.—And is not that the result of a carbonaceous condition of the blood and the deficiency of oxygen?

Witness.—On the contrary, many eminent pathologists are of opinion that an excess of oxygen may lead to consumption.

Mr. Coleridge.—Ah, you may have too much of a good thing, no doubt; but is it not a cause of consumption?

Witness.—Not a direct cause. It may tend to that general deterioration of the blood which is the real source and cause of consumption, but is not a direct cause of it.

Mr. Coleridge.—Then your distinction is between direct and indirect?

Witness.—No: between a sole cause and a co-operating cause.

The plaintiff states in his book that consumption is 'only the consequence of a carbonaceous condition of the blood.'

The witness was then challenged with the plaintiff's statement 'Catarrh is the first step towards consumption,' which he had declared to be grossly exaggerated. Even when colds were chronic and neglected they did not necessarily lead to consumption. A catarrh might be neglected and go on for a whole winter, and might pass away in summer, or might be prolonged for years, and become what was called an 'old man's cough.' It often happened that colds were unavoidably neglected; and yet happily they did not lead to consumption. If, indeed, there was a consumptive tendency, or if the cold were combined with other deteriorating influences there might be danger; but he entirely protested against such a broad statement as that 'Catarrh was always the first step to consumption.' So he entirely differed from the statement that deaths caused by consumption were one-fourth of the whole number of deaths caused by disease. That might have been supposed, half a century ago, when the bills of mortality were not kept so accurately as they are now, but it was not believed to be the case now. So of the statement that 'one-fourth of the persons we meet with are under the ban of this terrible disease.' It is nearer the truth to say that the deaths from tuberculous consumption amount to one in 8 or 9 deaths from all causes. He particularly objected to the passage:—'If, therefore, you have a hacking cough and slight shortness of breath, etc. you cannot doubt the existence of mischief in the lungs.' This, he said, was a great exaggeration, as these were very common symptoms in persons not at all consumptive. Asked about inhalation, the witness repeated his statement that it had been used as a means of cure for 30 years; and Sir C. Scudamore as long ago as that, had published a treatise on the subject, although it had not been found very successful. Iodine inhalation, and other forms of inhalation, however were still in use; but their value was problematical. He knew of no considerable physician who treated his patients exclusively by inhalation; but it was well known and used, and there have been fifty forms of inhaler invented and used, Hemlock, stramonium, opium, camphor, and many other drugs were thus used. The real inhalation of oxygen had been practised in London to a considerable extent—not exclusively for diseases of the chest, but for them amongst others. Fifty years ago Dr. Beddoes, of Bristol, used it; and it was originally suggested by Sir Humphry Davy. An institution had been actually established for the purpose; but the process had fallen into disuse. As to the plaintiff's process of inhalation of oxygen, it was utterly

impossible to discover it from his book. There was no mode in which oxygen could be brought into the lungs except in the form of gas. He found from inquiries of the plaintiff's patients that no such instrument was used as could supply oxygen separately—as a gas-holder.

In re-examination Dr. Williams stated that the efficacy of the treatment for consumption had greatly increased of late years, especially since cod-liver oil had been introduced in its purer forms; and it was now used to a greater extent than ever. (The evidence and cross-examination of this witness occupied the whole of the third and part of the fourth day of the trial.)

Other witnesses examined for the defence were Dr. Risdon Bennett, Dr. Cotton, Dr. W. O. Markham, Dr. Quain, Dr. George Johnson and Dr. W. Odling. They all expressed their general concurrence in the evidence of Dr. Williams, and added further important testimony of a similar kind.

Mr. Karslake's address for the defendant was commenced on the fourth day and concluded on the fifth. It was followed by Mr. Coleridge's reply for the plaintiff. On the morning following, the Lord Chief Justice summed up at great length; and the Jury after two hours' deliberation found a verdict for the Plaintiff: DAMAGES ONE FARTHING.

This verdict although nominally for the plaintiff, by assigning as damages the lowest coin in the realm, signified how little he deserved from the protection of the law, and leaves him chargeable with all his own costs in the action. The public press generally concurred in the justice of the decision. 'The Times' concludes its comment with these words: 'We should fail in our duty if we did not express the conviction that such a verdict entirely meets the justice of the case, and that our contemporary (the "Pall Mall Gazette") is entitled to the thanks of the public for a courageous attempt to protect their interests.' The medical journals acknowledged the benefit conferred on the medical profession by the trial, in exposing false and fraudulent pretentions and practices, and in upholding the moral and scientific character of the genuine art.

A word or two of remark on the principal personages in this trial. Mr. Coleridge (now Lord Chief Justice of England) although renowned for eloquence and argumentative power, appeared to me to be very deficient in exactitude of knowledge

and in aptitude for mastering the details of his case. In fact in technical matters he seemed to glory in professing his ignorance; and when dealing with them, he did not always come off well. In cross-examining me he propounded in a pompous tone this question, 'Have you taken into account the *vital capacity* of the lungs?' Dr. W. 'What do you mean by *vital capacity*?' Mr. C. 'Ah! that's what I want you to tell us; I don't know anything about it.' Dr. W. 'Well, I suppose you mean *vital capacity* in the sense used by Dr. John Hutchinson, who invented an instrument called a *spirometer*, to measure the quantity of air which a person could blow into it at a breath;—that quantity was a measure of what Dr. Hutchinson called the *vital capacity* of the chest. Having thus explained to the Jury what *vital capacity* means, what further question have you to ask about it?' But the learned counsel had nothing more to say. Another time, when I was under examination, and was speaking of the operation and good effects of cod-liver oil in tuberculous disease, Mr. Coleridge rose to his full height with a book in hand, and said in a solemn voice, 'Are you aware that Dr. MacCormac declares "that not all the oil of all the codfish that swim in the mighty ocean can avert for a single instant tubercular decay?"' Dr. W. 'That, I know, is his opinion;—*valeat quantum*.' Mr. C. 'And so we must say of your opinion—*valeat quantum*.' Dr. W. 'Undoubtedly;—I do not agree with those who object to the use of cod-liver oil.'

Mr. Karslake (afterwards Sir John and Attorney-General) on the other hand was remarkable for the care with which he studied his briefs, and spared no pains to make himself thoroughly acquainted with the subject, however technical it might be. And his arguments and examinations were equally satisfactory and to the point.

But for earnestness and concentration I never knew any one to equal the Lord Chief Justice Cockburn. He had been a patient of mine, and was personally interested in the subject of chest complaints. I was quite amused at the closeness of his attention when I was giving evidence, taking copious notes and stopping me when I went on too fast. His summing-up address to the jury proves how thoroughly he had entered

into and mastered all the details of the subject and weighed them in all their bearings in the judicial balance. A short-hand report was published in the 'Pall Mall Gazette' of December 3, 1866, and filled 10 columns.

The trial was one of great interest and importance to three Professions, Medicine, Law, and Journalism, which are under proportionate obligations to the proprietor of the 'Pall Mall Gazette' for the courage and liberality with which he went through it.

CHAPTER XXXVII.

JOINT WORK ON CONSUMPTION—CASE OF EARL ST. MAUR.

1868–1870.

Work on Pulmonary Consumption in conjunction with Dr. C. T. Williams. His assistance in statistics of cases. His joining me in practice. His marriage. Case of Earl St. Maur—his illness and Death. Action for Libel brought by Author against Duke and Duchess of Somerset—ending in complete retractation and apology. Abridged statement of Authentic Facts. History. Lord St. Maur's first visit and examination, Sep. 21. Duchess of Somerset's visit, Sep. 27. Opinion stated, and that further investigation and constant watching needed. Appointment made, Sep. 29—Further grounds for anxiety and cause for watchfulness—Arrangement for constant medical attendant, Sep. 30—Summoned at 9 A.M., went immediately, and heard of a very dangerous attack, in which another Doctor called in—(contradiction of false statements and charges in libel)—attack subsided, but fears confirmed as to nature of case—Directions given and nurse provided. At noon, message of complaint, replied to with directions. At 3 P.M., after calling at St. George's Hospital for the medical attendant, found patient as before, but in a few minutes attacked with laryngeal suffocation, threatening instant death—only chance in Tracheotomy—Surgeon sent for: on his arrival necessity of operation announced to Duchess as only means of saving life—temporary relief—but soon proved fruitless by signs of pressure below opening from *aneurism of aorta*. Retrospect and reflections on history and termination. Author astonished by false accusations of the Duchess, who refuses to permit an inspection. Writes to the Duke: no reply. Reasons for bringing action against the Duchess for libel on Author. Retractation and apology for libel. Extract from speech of Mr. Hawkins. Verdict for Plaintiff with full Costs. Preface to 'Authentic Narrative.' Declaration in vindication of Dr. Williams by London Physicians and Surgeons. Letter from Dr. Williams to thank the profession for universal sympathy and support.

THE Hunter trial attracted much attention—especially in the medical profession; and although the verdict was nominally for the plaintiff, yet the petty award of damages, and the publication of the overwhelming evidence against his pretensions and modes of procedure, were sufficient to answer the

object of the defendant and to put an end to the stigmatised practice. Had the language of the censure been a little more moderate, it would have equally effected its purpose, with the probable result of getting a verdict altogether for the defendant.

The prominent position in which I was placed as principal witness, I could not but take as complimentary: and it was very satisfactory to me that my evidence was supported by that of the eminent witnesses who followed me. I was especially gratified by the corroboration and further explanation of my statements on the chemistry of the subject, by the authority of the distinguished chemical Professor, Dr. Odling, the lucidity of whose evidence was highly applauded by the Lord Chief Justice.

I received several letters congratulating me on the manner in which I had represented at the trial the most correct and advanced knowledge of the subject, and evaded the quibbles of cross-examination. I was specially invited by the Editor of the *Lancet* to supply that journal with a summary of my views and experience on the treatment of Consumption.

And in truth the whole subject of Consumption had been brewing in my mind for many years, and the occasion of this trial had so stirred it up to increased activity that in spite of disinclination to resume again the arduous work of publication, I did deliver myself of several articles drawn from the numerous records of my experience. But I was by no means satisfied with this partial and ephemeral mode of disposing of the subject. I had been led, by large experience, to certain general conclusions respecting the nature of the disease and the best methods of treatment; and the increasing success of the results gave me confidence in them. But I felt the need of more exact methods of dealing with vast numbers of facts than by trusting to mere general conclusions. It was necessary more exactly to classify and to count the facts, as well as to observe and record them; and to make the inferences the result of calculation, rather than of vague impression.

I was always quite aware of the value of the numerical method, in dealing with large numbers of facts or cases; and

when I had clinical clerks and assistants, I largely employed them in this work: but I had no great aptitude for it myself, and rarely had time for it. But happily now my son Dr. Charles Theodore Williams came to my aid, and manifested both talent and taste for the work. He had been appointed assistant physician to the Hospital for Consumption at Brompton, and had been for some years assisting me in practice; seeing patients in my absence, as Dr. Quain had done previously. He was therefore advantageously placed for acquiring experience himself, and for becoming familiar with many of my patients and with my methods of treatment.

During my whole professional life, I had been in the habit of keeping concise (but accurate) notes of all but trivial cases —entering them in little books suitable for the pocket; and I had already between two and three hundred of these little books, containing about a hundred cases in each; amounting in all to between twenty and thirty thousand cases. To properly select, assort, tabulate, and calculate these, was a work of great labour, which I could not have accomplished by myself; but my son could devote much time to the work; and soon began to get at important results, which could not have been attained without this methodical system of study. For example, on the subject of the duration of life in consumption, my general conclusion,—drawn from partial calculations and limited numbers of cases, was—that during my experience, this length of life had increased from two years,—the same as that given by Laennec and Louis—to *five years*;—this was the number stated in my Lumleian Lectures, and repeated in the Hunter Trial. From a larger number of cases more carefully collected and calculated, and corrected up to the latest date of history,—my son found the average duration of life in 1,000 phthisical patients under my care during a period of twenty-two years, reached to nearly eight years in those that eventually died; and to above eight years in those who yet survived: a considerably longer duration than any hitherto on record. My son drew up an elaborate paper on the subject, which was discussed at the Royal Medical and Chirurgical Society of London, and published in the fifty-fourth Volume of their Transactions.

Having now happily found in my son the assistance which I had so long needed and wished for, I was in a position to entertain the proposal urged on me by Messieurs Longman & Co., *to publish a work on Pulmonary Consumption*, which was accordingly announced as forthcoming, in our joint names. Owing to the interruption of extraordinary events, to be noticed in this chapter, the book was not completed till the summer of 1871, and it will be referred to in the memoirs of that period.

At present I have a few words to say on the happy association with which God has blessed me in my son's adopting the same profession from his own choice, and in our being united in the same pursuits and interests. For some years he remained with me in the same house, but in 1868 he married, and occupied a small house very near me in Park Street. His wife is a daughter of Mr. Gwyn Jeffreys, F.R.S., a name eminent in the scientific world, especially in connection with his researches in Conchology, of which he has long been one of the foremost and most successful cultivators. Mrs. Gwyn Jeffreys, her accomplished mother, was a lady well known and much esteemed in a large circle of society; and the young couple began life with happy and encouraging prospects.

My son was already well known through his little work on the 'Climate of the South of France, &c.,' which had reached a second edition; and several contributions from his pen had appeared in the Transactions of the Pathological and other Societies. At a later date he drew from my case books and his own a large stock of information on the results of climate in Consumption, which enabled him to show by the numerical method the actual value of climate in the treatment of patients, and to classify the forms of Consumption suitable for each variety of health-resort.

The case of the illness and death of the Earl St. Maur, with notice of the action for Libel brought by Dr. Williams against the Duke and Duchess of Somerset, and ending in a verdict for the Plaintiff, and a complete retractation and apology from the Defendants.[1]

This is an abridgment of a pamphlet, published after the trial, to supply an authentic statement of the facts of the case, which would have been proved by evidence in court if the trial had been allowed to proceed. I regret that so much space should be occupied by it; but I feel it due to myself that my character should be entirely cleared from every imputation arising from this, the only serious attack that has ever been made on it. The language of the libel is too gross for publication and may well be consigned to oblivion; but extracts from it, and allusions to it will be enclosed in brackets.

Earl St. Maur, only son of the Duke of Somerset, consulted me by appointment on the 21st of September, 1869. He brought a letter from Dr. Fairbank of Windsor, describing the case, which he considered to be *emphysema of the lungs*. Lord St. M.'s account of himself was that his breath was not short generally, and he had always been used to active exercise, but on running long or fast the breathing would become noisy like that of a 'roaring' horse. During the last year, when residing at Tangiers, in Morocco, he was in the habit of riding fast for several hours daily, under the notion that it would improve his breathing powers. On one occasion, when something put him in a violent passion, he put his horse to full speed, which brought on a severe fit of palpitation, and his breath had been shorter ever since. For the last three months he had an occasional dry cough, and frequently a pain in the centre of the chest. He had still persevered with active exercise, chiefly walking, under the idea that it would prevent his breath from getting shorter. About six weeks

[1] Counsel for Plaintiff, Sir John Coleridge, Q.C., Solicitor-General, and Sir John Karslake, Q.C.

Counsel for Defendants, Mr. Hawkins, Q.C.

I had chosen Sir J. Karslake as the counsel in whom I had entire confidence: but I was privately advised by high authority to retain also the Solicitor-General, who by office was entitled to precedence. I know that Sir John Karslake thoroughly mastered the details of the case, and I had reason to regret that he could not act as leading counsel.

ago, on making a few passes with a rapier, he was suddenly seized with what he called 'extreme oppression, spasm, and panting,' and when he recovered from this there followed frequent cough and shortness of breath. He sent for Dr. Fairbank, and under his treatment gradually improved; but breath was still short on exertion, with occasional attacks of increased difficulty in the morning. Had lost strength and colour. Pulse now 80, weak, unsteady.

On careful examination of the chest, I found no signs of the emphysema mentioned by Dr. Fairbank. Breath sound distinct in every part, especially the inspiration, which was louder and harsher than usual. No prolonged expiration, wheeze or crepitus. Above left scapula breath and voice tubular. Heart sounds very weak, slight venous murmur in neck. As these signs, especially the natural motions, shape, and percussion sounds of the chest and the absence of prolonged expiration or wheeze disproved to me the presence of emphysema, I concluded that the condition mentioned by Dr. Fairbank was a temporary one, and had now passed away. But there remained the loud inspiratory sound throughout the chest, and the tubular sounds above the left scapula; and I suspected that these were due to the same cause—some consolidation in, or tumor pressing on, the inner part of the summit of the left lung. But the signs were too equivocal to guide to any definite opinion at that time; and in prescribing for the patient, and in explaining to him his symptoms, I referred principally to the weakness of the circulation, prescribing quinine and iron by day, and an anti-spasmodic at night, to counteract the tendency to spasmodic breathing, which he still occasionally felt in the mornings.

The Duchess of Somerset had written to caution me not to alarm the patient, and that she would call later to hear my opinion. I therefore did not explain to him the nature of his case, but advised him generally, and enjoined quiet and moderation in exertion. The Duchess did not call as she promised; but a few days after, sent a messenger with a letter, requesting me to write to her son to dissuade him from going into Wiltshire which he intended to do. On my inquiring of this messenger how Lord St. Maur was, I learnt that

he was better, but sometimes still had slight attacks of difficult breathing described as being in the throat and of a choking character. This account again suggested to my mind the possibility that these attacks might be of the nature of laryngeal spasm, excited by the pressure of a tumor on the windpipe and inferior laryngeal (or recurrent) nerves within the chest, and such tumor would account for the tubular sounds which I had found above the left scapula. I wrote to the Duchess that I expected to see her Grace to explain my views, and that I must see her son soon again, because his case required further investigation. I also wrote to him to the same effect, and advising him not to go into Wiltshire.

On the 27th of September I received from the Duchess a letter announcing her intention of calling on me, and she came that day at 2 P.M. In an interview of nearly an hour, I explained the result of my examination, and made many inquiries as to the previous health and habits of the patient. I stated that I found no signs of emphysema, but indications of some disease at one part of the lung, which might be from consolidation in it, or something pressing on it, either of which might cause cough and short breath, and might prove serious; but did not appear active at present. The more prominent symptoms were those of weakness of the heart and system generally, for which I had prescribed a tonic, nutritious diet, and careful and quiet living. The Duchess asked numerous questions about climate and plans for the winter to which I could only reply conditionally, in consequence of the uncertainty of the disease; but I urged on her Grace the absolute necessity of my seeing the patient again as soon as possible, as his case required further investigation, and more constant watching. It was thereupon agreed that he should be brought to my house at 4 P.M. on the 29th. On the morning of that day a letter from the Duchess came to say that there had been a 'bad attack of breathing' that morning and Lord St. M. would not be able to come to my house, and requesting me to call in Dover Street at six P.M.

I called at that hour, and found him just arrived. He was fatigued, weak, and with an unsteady pulse. He told me that, two days before, he had been again (in spite of the

warnings from Dr. Fairbank and myself) endeavouring to improve his breath by exercise, and had walked continuously for three hours and a-half; that he was so much exhausted that he could eat no dinner, and took only soup and mulled claret. Next morning, on awaking, he was attacked with a severe fit of difficult breathing, which 'almost suffocated him.' He had felt exhausted and weak ever since, and had been able to take very little solid food. This morning he awoke feeling faint, and on rising had another severe attack of 'choking' difficulty of breathing, which so much weakened him as to oblige him to postpone his journey for two hours. He said that he had borne the journey pretty well.

On listening to the chest, I heard the inspiratory sound loud in every part, and somewhat harsh in tone, especially at the upper parts of the chest, as if from some constriction of the trachea; but there was no laryngeal stridor, or even hoarseness (such as would be present in laryngitis). The tubular sounds were still distinct above and within the left shoulder-blade, but I could neither hear nor feel abnormal pulsation in any part, which would give conclusive evidence of the existence of aneurism.

Still the increased harshness and almost tracheal character of the breath-sound in the upper parts of the chest, and the recurrence of fits of difficult breathing, which, from the last description, seemed more clearly to have been laryngeal (in the throat), increased my suspicion as to the existence of an intrathoracic tumor.[1] I expressed my apprehensions to the Duchess, and proceeded to explain that her son's condition was so serious as to require much more care and attention than he had hitherto received. I ascertained that he had seen no medical man since his visit to me on the 21st. I told the Duchess that in future he must be constantly watched by a medical attendant close at hand, as he was likely to require prompt and frequent aid in the attacks which had been

[1] A tumor within the chest, which, by pressing on the windpipe, may cause cough and more or less permanent difficulty of breathing, by impeding the passage of air to the lungs; and by pressing on certain nerves which regulate the muscles which open and shut the glottis (or opening into the top of the windpipe) may also cause spasm of the glottis, a more severe difficulty of breathing in fits, which, when intense and prolonged, often prove fatal.

increasing in severity. I urged that he must be strictly restrained from all exertion, not only from the long walks which had been so injurious to him, but even from the exertion of going up and down stairs, and therefore that all his apartments should be on one floor. I pointed out the need of his having frequent supplies of such food and light wine as he was able to take. His inability to eat much solid food had added to his weakness, and I advised that more of the soups and such nutriment should be supplied. To prevent the faintness which seemed to have brought on the severe spasm on the morning of this day, I recommended that some egg-flip (an egg beaten up with a dessert spoonful of brandy and a little boiling water added) should be given him on first awaking in the morning.

In reference to my requisition that Lord St. Maur should have more regular and constant medical attendance, the Duchess asked me to find for him an experienced medical man to reside in the house. I replied that it might not be easy to find one immediately, but that I would make inquiries, and, if possible, get one to come on the next day (Sept. 30) in time for my visit, which I arranged to be at three o'clock. I told the Duchess that Lord St. Maur must not return to Bulstrode, as he was obviously very weak, and required rest; and it was necessary that I should have a further opportunity of investigating his case, which was still one of some obscurity.

The Duchess showed me a back room on the ground floor where a bed might be prepared for him. It was small but lofty, and I said it would do for the present; and having prescribed a tonic of ammonia and citrate of iron, and an anti-spasmodic pill of stramonium and compound galbanum, I took my leave.

On the morning of the 30th of September, at *a quarter before nine*, a message was brought to me, written on a scrap of paper, to the effect that Earl St. Maur had fallen on the floor in a fit of difficult breathing. I immediately went upstairs for a bottle of chloroform, and then taking a cab I arrived in Dover Street *before nine*.

(As this contradicts a chief charge in the libel—*that Dr.*

Williams was sent for soon after eight and did not come till twelve —I think it well to mention that my statement can be proved by the testimony of two of my servants, who received the message, and two of my daughters, who were at breakfast with me when the message was given to me, and saw me leave the house. My return to my house at *ten* can be attested by two of my servants. Also Dr. Hardinge, in a letter to me, writes:— 'I was sent for about 8.15; you came about 9.' This thoroughly demonstrable fact, *that I went as soon as I received the summons*, entirely refutes the charges of neglect made and reiterated several times throughout the libel. There are several other errors with regard to time; showing that the mind of the Duchess must indeed have been a 'chaos' when she wrote the libel.)

On my arrival, I learned that Lord St. Maur had passed a quiet night, and on awaking at eight, the egg-flip had been brought to him, and it appeared that enough water had not been added, for it was too strong; and, in swallowing it, he coughed, and, hastily reaching to ring the bell (which was at some distance), the spasm attacked his throat with such difficult breathing, that he fell out of bed on the floor, where he was found by the servant almost insensible. I found Dr. Hardinge, who, as he resides near, had been called in; and he told me that after applying the fumes of sulphuric and chloric ether, mixed with chloroform, to the nostrils, the spasm soon relaxed, and the patient regained his consciousness. I asked Dr. Hardinge, 'Was the breathing laryngeal, like in spasm of the glottis?' He replied, 'Yes, as in laryngitis.' This confirmed my previous suspicions; and I told Dr. H. that I feared that the attacks were caused by a mediastinal tumor, probably aneurismal, pressing on the windpipe and recurrent (or inferior laryngeal) nerve. I added that the cause could not be laryngitis, as there had been no previous symptoms of that inflammation, but only several milder fits of dyspnœa like that just passed. To this Dr. Hardinge made no reply; and after a few minutes' further conversation, during which I said that I was glad he had been able to give prompt assistance, and give me an account of the attack, we parted on quite friendly terms.

(I mention this, because the Duchess, in the libel, has taken up and dwelt much on a strange misconception that I had quarrelled with Dr. Hardinge, and '*behaved with womanish rudeness*' to him, which is totally without foundation. When I first saw him, I did not recognise him, not having met him for many years, but when he told me who he was, I recollected him, and spoke to him as an old acquaintance. So far from being annoyed at finding him with my patient, I thought it most natural that, residing so near, he should be called in at this sudden attack, even before any message reached me; and I should have advised his continued attendance for the same reason, but that, at the request of the Duchess, I was in a few hours to bring a competent medical attendant to remain constantly with the patient. Dr. Hardinge, in a letter to me dated 19th November 1869, writes: '*I assure you I was not at all aware of any incivility on your part when I met you on the 30th September, at the Duchess of Somerset's; indeed, my feeling on the subject was quite the contrary, and I have said so.*' Yet this fancied *rudeness* on my part towards Dr. Hardinge seems to have originated the erroneous notion which pervades the libel, that I entertained and acted under a feeling of jealousy or rivalry towards him, and that I sacrificed the life of the patient to this feeling—a charge than which nothing could be more absurd or more utterly without foundation. It is well that such charges have now been 'utterly, absolutely, and unreservedly withdrawn.')

I remained after Dr. H.'s departure, and found the patient quite free from cough and spasm, lying on his left side, with his head quite low, and able to speak in a weak voice. The pulse was steady, and the breathing tranquil, but it was now accompanied with a laryngeal sound. He told me that he had neglected to take the anti-spasmodic pill the night before, but had slept pretty well, and felt no difficulty of breathing until the too strong egg-flip set him coughing, and as he was alone, he made a great effort to reach the bell-rope, which brought on the spasm, under which he fell out of bed, and lost his recollection, remaining on the floor till Dr. Hardinge arrived. He said he was now quite easy, and I did not think it right to disturb him with any further examination.

The Duchess seemed so fully aware of the serious nature of this formidable attack, that it appeared to me quite unnecessary to make a formal announcement of it. In fact, the patient had obviously been in a dangerous crisis; and now that that danger had passed away, instead of converting alarm into terror by dwelling on it, I considered it my duty to calmly point out what could be done to guard against its return, and especially to avoid all such occurrences as those which seemed to have provoked the spasm in this instance—swallowing a too stimulating liquid, and making a sudden violent effort to ring the bell. Accordingly, I advised that his food should be restricted to bland and soft kinds of nutriment, in small quantities, and at short intervals, particularly specifying mild soups and broths, milky food, and only diluted wine. I also directed that he should not again be left alone, as he was in the morning, but that he should be constantly watched and attended to. The Duchess then asked me to recommend a nurse, which I did; and an experienced one was in the house within an hour from that time.

The assurance that Dr. Hardinge gave me, that Lord St. Maur's attacks were, as I had already inferred, of the nature of laryngeal spasm, increased my suspicions that the disease from which he was suffering was *a deep-seated tumor in the chest*, most probably aneurism, which, by pressing on the *windpipe*, caused the habitual shortness of breath, cough, and pain of the chest, which had existed for several months; and also produced the harsh inspiratory sound which I had noticed on the 21st and 29th; and, by pressing on the *left recurrent nerve*, caused the fits of laryngeal spasm, the first of which was probably the severe attack which occurred after sword exercise early in August, and the last of which was that which had just taken place, and was witnessed by a medical man for the first time.

Being thus gradually led nearer to the inference that Lord St. Maur was the subject of a formidable and intractable disease, I had to consider how I could best perform the painful duty of fully communicating my fears to the Duchess and other relatives. I had already begun to prepare her Grace by saying that I feared that the cause of the attack was a tumor

in the chest, pressing on the windpipe and its nerves, and I again expressed this apprehension this morning; but I had not explained the formidable nature of the suspected malady, and of the fearful results to which it would probably lead. On consideration, I thought it better to defer the complete announcement of my opinion of the probable nature of the case until my visit in the afternoon, when I expected to have an opportunity of further examination.

Another reason for this delay, was that the Duchess, although greatly alarmed at the morning attack, supposing her son to be dying, yet asked me no questions as to the reality or amount of danger, and as her Grace complained of confusion in her head, her heart complaint, and the fatigue and anxiety which she had gone through in the last two hours, I judged it unadvisable prematurely to increase her alarm. Further, there appeared to be no relative or friend with her to comfort or support her, only servants, and those few and by no means efficient. In the afternoon, I expected that there would be the comfort of having a medical attendant constantly at hand, to give aid and direction in all the serious contingencies which the suspected disease might entail in its course. These considerations led me to defer till the afternoon the full announcement of my opinion. Did the nature of the malady and the particular course of this case justify me in this delay? Could the speedily fatal result have been foreseen, or had it been even probable, the unfavourable opinion should have been announced without consideration of feelings or convenient seasons. But, in addition to the uncertainty as to the correctness of this opinion, my experience and reading with regard to cases of the supposed disease enable me to affirm, with some confidence, that so speedily fatal a result could NOT have been foreseen; and that it was not a probable, but an exceptional result. Even the most rapidly fatal of intrathoracic tumors, aneurisms of the aorta, commonly last, with symptoms more or less urgent, for several weeks, and sometimes for months, before they destroy life; and other tumors, glandular and malignant, are usually still slower in their course. In Lord St. Maur's case, on the other hand, except one severe attack in August, for which he saw Dr. Fairbank only three times,

there had been no urgent symptoms until after his long walk on the 27th of September, only three days ago. There had been only a few slight attacks before this period; and in the last two days there had been only one on each morning, more severe certainly, but in each case it had passed off without any special treatment. Even the much more formidable spasm of this morning, intense and dangerous as it must have been, yielded readily to the simple remedy of applying to the nostrils the vapour of ether and chloroform; and might be ascribed rather to the aggravating circumstances that brought it on, than to the advancement and extent of the organic disease. By the careful avoidance of all such circumstances, I had reason to hope that the attack might be averted, at least till the following morning, that being the time of the day in which it had hitherto occurred. Therefore, not anticipating any early return of the dangerous symptoms, I judged it safe, and more considerate to the feelings of the Duchess, to defer the full announcement of my opinion, and of the nature and prospects of the case, till the afternoon. After watching the patient for some time, and observing his tranquillity and the ease of his breath, I prescribed a composing anti-spasmodic mixture of Valerian, ether, and chloroform, and left him about ten, promising to return soon after three, when I expected to provide his special medical attendant.

About noon, when I was engaged with my morning patients, the following note (unsigned) was brought from the Duchess:—

20 Dover Street.

Dear Dr. Williams,

St. Maur has vomited much, and got hardly anything down. He complains of faintness.

I immediately wrote in reply, to the effect that if the breathing was easy, the vomiting had probably been a relief; and that the faintness would subside on giving chicken broth, and arrowroot with a very little brandy, in small quantities, at frequent intervals. As the symptoms did not indicate danger, and I was engaged in important consultations, I did not think it necessary to visit the patient before the time appointed, and I sent word to that effect.

As soon as I had finished with my morning patients, I drove to St. George's Hospital to find a medical attendant for Earl St. Maur. After making inquiries, Mr. Jones, the resident medical officer, strongly recommended to me Mr. Barker, who had formerly been house surgeon, and had subsequently had much experience in both medicine and surgery. To him I mentioned that I suspected intrathoracic tumor in the case, which he would have charge of; and appointed him to meet me in Dover Street at half-past three.

I arrived in Dover Street about a quarter after three. The Duchess told me that she expected me at twelve, and that she had again sent for Dr. Hardinge, and that he remained a long time expecting me to come. I reminded her Grace that both this morning and on the evening before, I had fixed the time of my visit at or soon after three, and that I had been so much engaged with important consultations that I could not come before. Her only reply was, 'My head is so confused, I am losing all my memory.'

Her Grace said that Lord St. Maur had had no return of the difficult breathing, and that the vomiting soon ceased. She did not tell me what remedies Dr. Hardinge had used, but said that he had expressed his opinion that the case was one of laryngitis. On this I remarked that I did not think that he would hold that opinion if he were made aware of the previous history, and of the total absence of the usual symptoms of inflammation of the larynx.[1] But I neither expressed nor felt any displeasure or dissatisfaction at his having been again called in; and so far from being jealous of him, if his presence could be a comfort to the Duchess in my absence, and before the

[1] I really did not at that time suppose that Dr. Hardinge could maintain this opinion, formed only from this day's observation of the case, when the recent attack made the patient unable to bear a proper examination. The whole previous history of the case, the absence of hoarseness or other permanent affection of the voice, except in and after the paroxysms of dyspnœa, the absence of any laryngeal cough or breathing, and of pain or tenderness in the larynx, and the possession of a clear, strong voice, completely negative the notion that the case was one of laryngitis. Many of the most eminent physicians and surgeons in London, who were to give evidence at the trial, unanimously agreed on this point, that whatever doubt might remain as to the true nature of the disease, it certainly could not be laryngitis or laryngeal ulcer.

arrival of the permanent medical attendant, I was rather pleased than otherwise that he had been there.

I found the patient stronger, and able to sit up in bed. He told me that the vomiting was brought on by his drinking too much mulled claret—a beverage not ordered by me, and not proper for him, if made, as usual, hot with spice. On making a further slight examination of the front of the chest, I heard still the slight laryngeal sound noticed in the morning, and the harsh inspiratory sound down the chest. I also with one finger gently touched the outside of the larynx, asking if it was tender. He replied quietly, 'a little on the left side.' The breathing was then quite tranquil. Finding his pulse flagging, I advised him to take some chicken broth, and I went into the adjoining room to Mr. Barker, who had just arrived. I believe that the Duchess alone was with the patient. After I had been three or four minutes conversing with Mr. Barker, we were hastily called to Lord St. Maur, whom we found struggling with the most severe laryngeal spasm that I ever witnessed. He was breathing with tremendous effort, with a tight hissing noise in the larynx, and throwing his arms about in great distress. In a hoarse whisper, he said, 'Do something for me, or I shall die.' These were his last words. Immediately after, the eyes were fixed in a wide stare, with pupils largely dilated,[1] and the whole powers and consciousness seemed concentrated in the violent efforts to breathe through the almost closed glottis. I tried to give him ether and water, which was at hand, but now the swallowing was difficult, and soon I could get nothing into his mouth. Mr. Barker and I then plied the nostrils with ether vapour from a handkerchief, which is well known to be the most effectual way of applying it.

Seeing no symptoms of relief, and feeling sure that the spasm must soon end in suffocation, I said to Mr. Barker, 'Tracheotomy is the only chance.' He assented, and, going

[1] This remarkable dilatation of the pupils continued till the patient's death; but after the operation I observed one pupil (I think the left) much more dilated than the other, and I pointed this out to Mr. Holmes, as having been described as a symptom of intrathoracic tumour, pressing on portions of the great sympathetic nerve.—Dr. John Ogle, *Medico-Chirurg. Trans.*, Vol. 42, 1852.

outside the door, I begged him to go as quickly as possible for the nearest operating surgeon of eminence, mentioning Mr. Cæsar Hawkins and Mr. Pollock, in Grosvenor Street, as the nearest which I could think of. On his way, Mr. Barker recollected Mr. Holmes, of Clarges Street, as nearer.

In the meantime, I was doing all that I could do to sustain life;[1] applying ether vapour to the nostrils; wetting the throat and upper chest with ether, and covering it with my hands to cause a strong burning sensation on the surface; pressing the chest at each expiration to help the now shortening breath: for the insensibility was now complete, the face ghastly pale and covered with cold sweat, the pulse very weak and irregular, whilst the hissing noise in the larynx showed that the spasm was as tight as ever. Then returned Mr. Barker, and announced 'Mr. Holmes, surgeon to St. George's Hospital,' who was accompanied by Mr. T. H. Smith, surgeon, of John Street, Berkeley Square. As these gentlemen, breathless with haste, went to the other end of the room to make preparations for the operation, I turned to the Duchess, who was behind me, and said, distinctly and emphatically:—'*The only chance of saving his life is by making an opening in the windpipe, and Mr. Holmes is come to do this.*'[2]

[1] The nurse can attest this, in refutation of the assertion in the libel that 'Dr. W. did nothing, said nothing,' &c. She also, as well as myself, positively denies the truth of the statement that we 'let the patient drop back like a log of wood.'

[2] The nurse (Mrs. Burfoot) who was with me, tending the patient, distinctly heard me say these words, and can attest the fact. It may be asked why I did not earlier apprise the Duchess of the proposed operation before Mr. Barker went for the surgeon. One reason for not doing so was, that I was so engrossed in watching, and, so far as was possible, ministering to the almost dying patient, that I dared not turn from him for one instant to explain and discuss the question of the operation. A second reason was, that I really thought that it would be more painful and agitating to her Grace's feelings to be told of the operation beforehand, and to be kept in dreadful anxiety lest the surgeon should not arrive in time, than to be made acquainted with this last resource of art only on the arrival of the surgeon, with the certainty that his aid was at once available. When after death the Duchess reproached me with not having asked her permission for the performance of the operation, I reminded her Grace of my having given her this intimation. Her Grace was understood, both by Mr. Holmes and myself, to admit the fact, her Grace's complaint simply being, 'But you did not tell me it was an operation.' I replied to this effect, 'was this a time for explanations when your son was, so far as we knew, dying?'

I then turned round immediately to attend to the almost dying patient, and I did not hear the Duchess make any reply —there was neither word nor sign of objection—and immediately the Duchess joined us in giving directions for the operation, and for moving the bed on which the patient lay, to the window at the other end of the room.

When the incision was made into the windpipe, the patient showed not the least sign of feeling, as all the surgeons can testify. His features were unchanged, and his hand, which I held, was motionless. Little more than an ounce of blood flowed from the wound—a trifling amount for this operation. At first little air passed by the opening. Mr. Holmes then applied his lips to the wound to suck out any blood that might have flowed into the trachea, but little came. After a few minutes, the air passed more freely, and the laryngeal breathing ceased, and there was now a manifest improvement in all the symptoms. The pulse improved in strength and steadiness. The livid pallor of the lips and cheeks gave place to a little colour. The face and hands, which had been quite cold and clammy, regained some warmth. There was no return of consciousness.

Still I was grieved to see that the relief, although apparent, was by no means so complete as it usually is in successful cases of tracheotomy. The breathing was still laborious;[1] the spaces between the ribs and above the collar-bones (technically termed the intercostal and supra-clavicular spaces) were drawn in at each inspiration, proving that there was an obstruction in the windpipe below the artificial opening—such, in fact, as could be produced only by an aneurismal or other tumor pressing on the lower part of the windpipe. I expressed to Mr. Holmes my fears thus unhappily confirmed, and that we must not look for complete or permanent relief, and he

[1] Messrs. Holmes, Barker, and Smith all attest that the breathing was still laborious. Mr. Barker observed the drawing in of these intercostal and supra-clavicular spaces. Mr. Holmes remembers observing that the first intercostal or infra-clavicular space was drawn in. This laborious state of breathing made it necessary to supply air as pure and fresh as possible from the open window, as in all cases of extreme difficulty of breathing. The exposure to cold thereby, (complained of in the libel,) was too short to be injurious, and was counteracted by warm flannels, which were applied as soon as they could be procured.

took the same view, both as regards the existence and nature of the obstruction, and the probable result.

The spasm of the glottis had been completely relieved. There was no longer the hissing noise in the throat; and by a lighted match we found that air passed both by the wound and through the nostrils, but there was an insufficient supply of air to the lungs. The jaws were no longer firmly clenched, and some power of swallowing was regained, so that I was enabled to give in spoonfuls warm chicken broth, and brandy and barley water;[1] and these supplies had a manifest effect in restoring strength to the pulse and warmth to the surface, after intervals of flagging, which recurred several times. About an hour after the operation, the closure of the jaws returned, and prevented the supply of nourishment: we endeavoured to remedy this by introducing a cork between the teeth, but with only partial success; and the flagging of the pulse and inequality of the respiration became more evident. At about a quarter after five, there was a slight indication of returning consciousness. The patient turned his head first on one side, then on the other, and the Duchess then spoke to him a few words in a loud voice, and he looked round with something like intelligence.[2] But this was but the flickering of the lamp before its final extinction, for in a few minutes the pulse became weaker and slower, and then stopped; and lastly the respiration slackened, and, after a few gasps, ceased, about an hour and twenty minutes after the performance of the operation.

On taking a retrospect of this melancholy history, thus

[1] (The assertion in the libel that I *choked the patient with chicken broth* is an absurdity; as every medical man knows that the artificial opening below in the windpipe rendered choking—that is, stopping the breath in the throat—impossible. It was equally false that I 'choked every effort to speak.' There was neither power to speak, with a hole in the windpipe, nor even consciousness, to make the effort.)

[2] The partial or complete restoration of intelligence shortly before death has been noticed in several diseases. Supposing this case to have been one of aneurism of the arch of the aorta, and that the suffocation was brought on by the sudden swelling of the aneurism, that swelling would diminish when the failure of the heart's power reduced the arterial pressure; and with this diminution there might be a partial recovery of consciousness.

terminating in death with such awful rapidity, I can explain its course and its symptoms throughout, only on the supposition that there was *an aneurism*[1] *of the arch of the aorta*, probably at its posterior aspect, which by pressing on the windpipe and left recurrent nerve, produced difficult breathing, both constant and in paroxysms, and that this aneurism, in the last three days of the patient's life, increased with such fearful rapidity as to give little time for investigation or warning, during the short period of twenty-four hours, when the patient was under medical care; that is, from six P.M. of the 29th, when I saw the patient for the second time, to half-past five P.M. of the 30th, when he died.

The existence of an *intrathoracic tumor* was recognised as a *possibility* on my first examination on the 21st, but it became probable only when I first heard of the slight attacks of difficult breathing becoming somewhat of a laryngeal or choking character (about the 23rd or 24th). The fatal walk of three and a-half hours on the 27th obviously gave a sudden increase to the disease; the fits of difficult breathing becoming more intense, and the general health and strength suffering more in consequence. Therefore, when the patient came under my observation for the second time, on the evening of the 29th, although the physical signs were still not conclusive, yet the fits of decided laryngeal dyspnœa (difficult breathing), made them more significant, and warranted me in entertaining and expressing my fears as to the existence of a tumor, and in insisting on the necessity of more constant medical attendance, and of more rigid injunctions to avoid all undue exertion and exhaustion in future. On my third visit, at nine in the morning of the 30th, when the attack of laryngeal dyspnœa had been witnessed for the first time by a professional observer, the probability of its cause being a tumor

[1] An *aneurism* is a swelling of an artery into a pouch or sac, from the yielding of a portion of the coats of the artery. Such swelling or tumor pulsates with each beat of the heart, which keeps it always distended with blood; and this distension tends to enlarge the tumor, which, pressing on the adjoining parts, may irritate, compress, and displace them in various ways, and may thus cause distressing and fatal disease, or may end by the rupture of the tumor and sudden death by hæmorrhage. Aneurism affecting the aorta, the great artery of the body, is one of the most intractable and fatal of diseases.

within the chest was increased; and although its greater intensity might be in some measure ascribed to the unfortunate accident of the patient's falling out of bed, in his effort to ring the bell when choked with the strong brandy and egg, yet the severity of the paroxysm, and the persistence for the first time of a slight laryngeal breathing after it, seemed to point out a progressive increase of the disease.

But the strongest evidence (short of *post mortem* inspection) of the seat and fatal nature of the disease occurred during my fourth and final visit, after three P.M. on the same day, 30th. Outstripping all calculation, this strangling spasm—this awful death-blow—fell after an interval of seven hours only from the last attack, instead of twenty-four, as in former instances. Nothing could exceed its overwhelming intensity, for in the course of two or three minutes of frightful struggle for breath through a tight hissing glottis, the voice was reduced to a hoarse whisper, then silenced for ever; the eyes fixed in a ghastly stare, with widely dilated pupils; the face overspread with the pallid hue and clamminess of death; the features set in rigidity; the jaws firmly closed; and consciousness so suspended that even the surgeon's knife elicited neither movement nor sound.

And the operation gave yet another proof of the real seat and nature of the disease. It analysed that state of suffocation, and proved that it had a twofold cause. No sooner was air admitted through the opening in the windpipe, than the laryngeal hissing ceased. There was no longer spasm of the glottis, and air passed by the nostrils as well as by the new aperture. And hence there were some signs of returning life. The pulse gained strength and steadiness, some colour and warmth returned to the lips and face. The jaws relaxed, and liquids put into the mouth were distinctly swallowed. But the breathing, although not stridulous (hissing), was laboured still. At each inspiratory effort the spaces between the ribs and above the collar-bones became concave from atmospheric pressure, which found no sufficient entrance to the lungs through the windpipe, being still obstructed by something *below* the artificial opening. What could this be but the

tumor still pressing on the lower part of the windpipe?[1] The operation had relieved the spasm of the glottis, caused by the pressure of the tumor on the recurrent nerves. But it could not resolve another element of the strangling disease, the tumor bodily compressing the tube of the windpipe itself. This remained beyond the reach of any remedy; and to its continued impediment to respiration, together probably with exhaustion of the powers of the heart, weakened by the long struggle, must be ascribed the inadequacy of the operation and the death of the sufferer.

But in tracing the evidences of the unusually rapid and unexpected increase of the disease in this case, do we not go far to prove that nothing but aneurism could run such a course? Other intrathoracic tumors, simple or malignant growths, or glandular swellings, do not increase with anything like such rapid strides. But aneurism may be quick or slow in its increase, according to the influences to which it is exposed by the constitution and habits of the patient. Excessive or long-continued exertion, excitement, and irregular living, will most surely hasten its course. Quietude of body and mind, with healthy but careful habits, generally retard the increase and fatal tendencies of aneurisms, and in a few cases lead to their obliteration and cure.

My distinguished friend and colleague, Liston, the surgeon, was carried off in the prime of his life and reputation by the same kind of aneurism as that which I believe to have been the disease of Earl St. Maur. Of robust frame, and delighting in his strength, he indulged his passion for athletic exercises in no measured degree, and was also what may be called a high liver. In this career he was attacked with choking fits, more than once relieved by hæmorrhage. Although strongly and repeatedly warned, he would not abandon his favourite exercises, and in six months the strong man was a corpse.[2]

It is not improbable that Lord St. Maur's disease may have had its origin in that hard ride, in a fit of anger, in Morocco, eighteen months ago, which he mentioned to me in

[1] The reader will observe that my letter to the Duke of 30th September, given further on, supplies documentary evidence that such was my opinion.

[2] See his case, Chapter XXVI.

his first visit. It brought on violent palpitation, to which he was not otherwise subject; and he thought his breath shorter from that time. Some time later succeeded the dry cough and frequent pain in the chest, and which yet did not deter him from persevering in long walks and rides, which he fancied were good for him. Then came the first warning, in the fit of suffocation, brought on by rapier exercise, in which he felt 'as if he must die.' It can hardly be doubted that this was a laryngeal spasm. Wisely warned after this by Dr. Fairbank, he seems to have been afterwards more quiet in his habits, until the 27th of September, when, regardless of the warnings which I had so recently repeated, he took that fatal walk of three and a-half hours, which, in all probability, caused an increase of the aneurismal tumor, and brought it into a state of dangerous activity. Each successive attack of spasm with laborious breathing would be likely to further distend the tumor, especially that of the morning of the 30th, aggravated, as it must have been, by his violent effort to ring the bell, and his consequent fall on the floor in a senseless state. Yet, even after this, the breathing was so easy, with only a slight laryngeal sound, and the voice so clear and strong, that there was no obvious evidence of the impending danger up to the moment of the last attack. That attack, commencing with intense laryngeal spasm and breath-struggle of tremendous force, must itself have caused a sudden increase in the size of the aneurism, so that when the operation removed the laryngeal spasm, there was evidence of the tumor still pressing on the lower part of the windpipe with fatal persistence, and destroying all hopes of a favourable issue.

It was only the overpowering violence of that attack that drove me to the necessity of advising the operation, as the last and only resource. It was not a case in which much could be expected from it; and in the absence of urgent symptoms, its performance could not be contemplated. In the morning of the 30th, I had no expectation that it would be required; and in the afternoon, when the last attack came on so unexpectedly and overwhelmingly, I recommended it as the last and only chance of prolonging life. Death was imminent. This offered the only means of averting it, which possibly it might

do, unpromising as the case was, for a few hours—perchance, even days.

I knew that the operation, skilfully performed, was free from danger. In the then state of the patient it could give but little pain. As it proved, it gave no pain whatever; and it assuredly did prolong life for more than an hour,—more than enough to have saved the patient, but for the existence of deeper disease, which lay beyond the reach of any remedy.

It may be observed that in the preceding narrative, which has been most scrupulously and carefully recorded, there is no mention of any manifestation of dissatisfaction or distrust on the part of the Duchess towards myself. Nor was I aware in the least degree that Her Grace was not fully confiding in the good faith and skill of the physician, who was entrusted with the care of her only son suffering from a very obscure and dangerous malady, and who spared no pains, and wrought to the best of his ability, to do what the resources of art enabled him to do. Throughout this short but anxious and painful history, my conscience is clear that I acted with good faith, from pure motives, and to the best of my judgment. The case was very obscure at first; but during the very few days when it was brought under my observation, its serious nature was discovered and distinctly announced; and if, in its rapid strides to its fatal end, it outstripped all calculations, and gave no time for adequate warning or preparation, this must be referred to the inscrutable decrees of Him who holds in His own hands the issues of life and of death.

It was, therefore, to my utter astonishment that, when all was over, and I was beginning to express my heartfelt sympathy with the Duchess under this dreadful stroke, Her Grace began to upbraid me in such terms of accusation and reproach as I do not think proper to repeat. Suffice it to say, that thus began some of those absurd and groundless charges which were afterwards repeated and enlarged on, in the libel,—charges arising from ignorance and misconception at a time when, as Her Grace's learned counsel says, 'her mind was frenzied,' and 'was a chaos incapable of fixed thought.'

These charges have now been 'utterly, absolutely, and unreservedly withdrawn.' Having become convinced that the impressions on which these charges were grounded were erroneous, the Duchess of Somerset assures me, through her counsel, that she no longer believes them; and he adds, 'I do, therefore, on her behalf, frankly and freely, and most unreservedly withdraw all those imputations which reflect on the professional honour and character of Dr. Williams.'

The narrative cannot be brought to a close without the mention of one act on the part of the Duke and Duchess which cannot be too deeply regretted under the circumstances —they refused to permit *an examination after death.* This procedure is one which ought never to be omitted in any case of obscurity or doubt, being proper not only for the interests of science, but also for the object of supplying information which is valuable in the physical history of a family. But in a case involving serious questions reflecting on the character and skill of the medical attendants of the deceased, an examination after death offers the only conclusive means of demonstrating the true nature of the case, and the real cause of death. Its performance, therefore, in such a case, becomes a positive duty, and the refusal to permit it incurs a serious reprehensibility.

In the presence of Mr. Holmes and Mr. Barker, I urged on the Duchess the duty and necessity of her allowing this examination to be made. My application was refused; and a message to the same effect, conveyed to the Duchess through her daughter, Lady Ulrica Thynne, was equally negatived.

In the evening of the same day, I wrote the following letter to the Duke of Somerset:—

49 Upper Brook Street: *Sept. 30th*, 1869.

My Lord Duke,

Nothing less than a strong sense of duty induces me to intrude on your Grace's attention in the moment of severe affliction; but I think that your Grace must perceive how important it is for the family and all concerned, that the real nature of Earl St. Maur's disease should be ascertained by *post mortem* inspection. That the death was caused by an obstruction to the free entry of air into the lungs, is certain; and it was not less evident to those who witnessed the last attack that nothing less than tracheotomy could give

a chance of relief. The failure of this measure leaves little doubt that the obstruction was below, out of reach of the operation, being caused by what I mentioned to the Duchess I was fearful of—*a deep seated tumor, pressing on the windpipe and its nerves.*

But certainty cannot be attained without examination, which would cause no disfigurement or mutilation of the corpse; and the knowledge to be thus obtained is valuable, not only to medical science, but especially in the history of a family, as showing the true nature of the diseases to which it is liable.

I trust that these considerations will induce your Grace to acquiesce in my proposal; and with sincere condolence, I remain,

My Lord Duke,

Yours faithfully,

C. J. B. WILLIAMS.

To his Grace the Duke of Somerset,
Bulstrode Park, Gerrard's Cross.

To this letter I received no reply.

In concluding this pamphlet, I have now only to say a few words to explain why it became necessary that I should bring this action against the defendants. No one who has read the libel (and as the Solicitor-General thought proper to read it entire in Court, it has been reported and spread through the length and breadth of the land) can fail to agree with the learned Judge (Mr. Baron Bramwell), who said: 'Dr. Williams certainly could not have done otherwise than bring the action he has done, because, as you must have heard, really it is a libel upon him in every way, one may say, as a professional gentleman.' And knowing as I did for a certainty that not only would the defendants be wholly unable to justify their charges, but also that the facts and assertions on which these charges were founded could in every instance be proved to be utterly erroneous and untrue, I considered that a court of law would afford the only satisfactory means of completely vindicating my character from the attack which had been made on it, the gravity of which, as it has been withdrawn, need not now be dwelt on.

One concluding word on the personal and professional bearings of such a case of libel on the conduct, skill, and

character of a medical man. I have now been practising my profession as a consulting physician during the last forty years, and never, among the thousands and tens of thousands of patients who have been under my care, has there occurred one instance in which, not merely has any such unheard-of charge as this recent one, but has any serious complaint whatever, been made, against my professional character and skill. I have been called on to minister in scenes more heartrending, and amid sufferings far more agonising, than those of the death-bed of the heir of the house of Somerset; and although not less successful than others of my brethren in mitigating woe and in warding off the stroke of death, yet, in common with others, I have had to struggle unsuccessfully with the destroyer in those, in this mortal life, common cases of intractable and fatal disease, where vain is the help of man; and my endeavours, having been faithful and earnest, have been always appreciated, however unsuccessful. And this, I believe, is only what is the common experience of my professional brethren, and it is what we all have a right to expect from those who entrust their health, or that of their relatives, to our care,—that there should be, between the physician and the patient and his friends, that mutual candour and confidence which prevent all concealments and misunderstandings; and whilst all means are used which human skill and attention can apply, we should all be ever ready to acknowledge that results are determined by an overruling and an allwise Power.

Extracts from the Shorthand Notes of the Retractation and Apology on the part of the Duke *and* Duchess *of* Somerset, *conveyed through their leading Counsel.*

Mr. Hawkins. Q.C.: 'My Lord, after the last appeal which my learned friend the Solicitor-General has made to me, I feel that I am myself only discharging my duty to the Duke and Duchess of Somerset, who have done me the honour to place their interests in this case in my hands, and discharging the duty which I feel also due to myself and my own position, in stating at once, most frankly and fairly, that so far as regards every portion of that libel, which

imputes to Dr. Williams guilt or misconduct, want of honesty, or want of integrity, or bona fides in his treatment of the case which was entrusted to his hands, I utterly, absolutely, and unreservedly withdraw them all. And, my Lord, I do more; for I think it due to Dr. Williams to say this, because perhaps this retractation of the libel might be deemed by my learned friend the Solicitor-General hardly to convey all I wish to convey. I wish to convey this. Without myself entering into a discussion at all as to what the nature of the Earl's disease was, with regard to which I apprehend we have little to do upon the question of the bona fides of Dr. Williams, I believe that Dr. Williams himself acted entirely to the best of his skill, and with all that knowledge which we know he possesses on the subject. . . .

'. . . My Lord, the Duchess wrote and penned this statement, not, I am very happy to be able to say, for the purpose of circulation; and it never was circulated beyond those acquaintances and friends who were perfectly well known to her. My Lord, it was written, not with the intention of gratifying any malignant feeling: it was written, not with the intention to do injury to Dr. Williams, but it was written under feelings such as I have already adverted to. It was written by her for the purpose of telling to those relatives and friends whose tender sympathies made them desirous of learning from her, who alone could relate it, the history of this most distressing case. She alone could relate it, for she alone had stood by that deathbed, and witnessed the ravening horrors of it. My Lord, it was under those circumstances that she penned it; and as she penned it her mind was a chaos, incapable of fixed thought; she herself was able but little to judge and little to consider the words as they flowed from her pen; and she diverged unquestionably, over and over again, from the narrative she was desirous of giving, for the purpose of giving vent to her own feelings, and bewailing that irreparable loss which only two days before had happened to her, and for the purpose then of raising her voice in her agony of distress against a gentleman whom she then believed had been the author of her terrible misfortunes. My Lord, she then believed it—I am bound to say she believes it no longer; but I believe I should be false to the interests of the Duchess herself, and I should not myself be making this apology in the spirit that I desire to do, if I were to say that the Duchess merely retracted that which she had written. It is right to you that I should state on her behalf, and to Dr. Williams for his own satisfaction, this. It is a more gratifying thing, I am sure, to him to know that that which she then believed she believes no longer.

'I am sure he will give me credit when I say so, and give the Duchess credit for having written what she then believed; and he will think that this apology and retractation is the more befitting, when I say that the advice, and the information, and the light which have, since the month of October, been thrown upon this most melancholy case by gentlemen of Dr. Williams's own high and honourable profession, have removed entirely from her mind the painful impressions which were then resting upon it and with which it was then clouded. Having her mind so relieved, and having come to the conclusion now that the impressions which she then formed—honestly formed—were erroneous, I believe that no human being will doubt that the honourable, that the high course which the Duchess ought to take is that which she now takes in withdrawing all those imputations in the fullest possible manner. My Lord, I do therefore on her behalf, frankly and freely, and most unreservedly withdraw all those imputations which reflect on the professional honour and character of Dr. Williams. . . .'

Verdict for the Plaintiff by consent: Damages, FIVE GUINEAS, *with costs as between Attorney and Client.*[1]

PREFACE TO THE 'AUTHENTIC NARRATIVE.

The trial in the case of Williams *v.* the Duke and Duchess of Somerset having been brought to a sudden termination by the Defendants, through their counsel making, and my leading counsel accepting, their complete and unreserved retractation of, and apology for, all the charges and imputations in the libel circulated by Her Grace the Duchess of Somerset,—no opportunity was afforded to me personally to explain the real history of the case, and to disprove in detail the serious mis-statements of facts which the libel contained. If I and my witnesses had been examined in Court, this explanation and correction would have been complete; but my leading counsel undertook by himself to represent my case in his opening speech, and when this speech was made, it appeared to myself and to all my friends who were in Court, a very imperfect statement of the case, and quite insufficient to supply the place of such evidence as myself and witnesses were prepared to give.

[1] The Complete Retractation and Apology were accepted with nominal Damages, in lieu of Full Damages, which were laid at 15,000*l.* Defendants had to pay all costs, amounting probably to between 2,000*l.* and 3,000*l.*

The want of this evidence is the more to be regretted, as the libel, with all its errors and mis-statements, written as it was, when the mind of the writer was, as her learned counsel states, 'a chaos incapable of fixed thought,' was published in full in several of the daily journals, and in one without even the interspersed comments of the Solicitor-General. This renewed and extensive publication of the libel, notwithstanding its complete retractation in Court, and in the presence of the Duke and Duchess of Somerset, has produced, on the minds of some persons, an erroneous impression that my conduct may have been such as to afford grounds of complaint.

It is to correct such erroneous impressions, and to supply to the medical profession and to the public those explanations which the Solicitor-General informed the Court I was about to give, that I have drawn up the following careful statement of the case. It will be found to contradict, on ample evidence, all the statements in the libel on which the chief charges are founded.

The Narrative details the full particulars of my attendance on Earl St. Maur, which consisted of four visits; the three first, each of about an hour's duration; the last of more than two hours, besides an interview of about an hour with the Duchess alone. It describes the careful examination, the anxious consideration, and the minute instructions and warnings which were given to the patient on each and every occasion. The nature of the disease, obscure at first, became gradually more apparent, through the scrutiny of scientific investigation; and was approached, if not quite determined, by a diagnosis, which would account for all the symptoms, and especially for the last unexpectedly rapid strides of the disease to its fatal end.

My conscience is clear that throughout this short but anxious and painful charge, I acted in good faith and to the best of my ability and judgment; and I have no doubt that the verdict of my own profession will be in my favour. It is with feelings of deep satisfaction that I refer to the statement at the end of this Preface, which expresses the deliberate opinion of some of the most eminent and enlightened physicians and surgeons in this country.

The retractation and apology of the Duke and Duchess of Somerset in Court has 'frankly, and freely, and most unreservedly withdrawn' all those imputations in the libel which reflect on my professional honour and character. This is so far satisfactory to me, as an act of justice, albeit somewhat tardy. It is still more satisfactory to me to prove that all the charges and imputations were, from the first, absolutely without foundation; but it is far more gratifying to me—I feel it to be a positive honor

—that throughout this painful and embarrassing trial, and amid opposing influences of high rank and noble birth, I have received the hearty support and approval of those whom I most esteem and venerate in my own honourable profession, and of my numerous other personal friends.

CHARLES J. B. WILLIAMS.

49 UPPER BROOK STREET: *March* 12, 1870.

WE, the undersigned, after a careful and anxious consideration of the case of the late Earl St. Maur as described in detail by Dr. Williams, desire to record our unanimous opinion that Dr. Williams's view of the most probable nature of his Lordship's disease was correct, and his treatment of it skilful, appropriate, and in strict conformity with the established teachings of medical science.

(Signed)

THOMAS WATSON, M.D.
GEORGE BURROWS, M.D.
WILLIAM JENNER, M.D.
WILLIAM W. GULL, M.D.
RICHARD QUAIN, M.D.
FRANCIS SIBSON, M.D.
WILLIAM FERGUSSON.
JAMES PAGET.
JOHN ERIC ERICHSEN.

DR. WILLIAMS AND THE DUCHESS OF SOMERSET.—LETTER FROM DR. C. J. B. WILLIAMS.

[*To the Editor of the 'Medical Times and Gazette.'*]

SIR,—I shall feel greatly obliged if you will permit me, through your columns, to offer my sincere thanks to the very many members of the Profession, in town and country, who have favoured me with letters on the subject of the late action for libel which I deemed it my duty to bring against the Duke and Duchess of Somerset.

My kind correspondents, who are too numerous to be answered individually, have much gratified me by their unanimous expression of approbation of my conduct, and by their general agreement with my views in relation to the case of the late Earl St. Maur. A very large proportion also give me the credit not only of having vindicated my own character from the groundless and unjustifiable charges made against me in the libel, but also of having upheld the character of our Profession by bringing before a legal tribunal this grave outrage on its sacredness and honour.

And assuredly, although in the patient exercise of our humane calling we may be required to make due allowance for ignorance and for infirmities of temper during hours of grief and bewildering affliction, yet for a Practitioner who has conscientiously done his duty in a very difficult and critical case, and has acted to the best of his abilities and judgment, to be made an object of ungrounded reproach and atrocious calumny, is a gross breach of justice and of good feeling, which, if allowed to pass unrebuked, would tend to sap all that confidence and those kindly relations which ought to subsist between a Medical man and his patients and their friends.

Happily such cases are very rare. None such has ever occurred to me before during the forty years of my active practice. And they will ever be rare if our Profession remains true to itself; if, rising far above that despicable servility that cringes and bows down before rank or riches, and submits to be insulted and trampled on by arrogance and caprice—rising, I say, far above such derogatory subserviency, it will take its proper stand on its own aristocracy of science and Christian beneficence; true to the nobility of its nature and of its aims; true to the interests of its own fraternity, all its members supporting each other and uniting for their common good:—thus firmly standing and self-supporting, our noble Profession may thus well bid defiance to all unjust and unbecoming attacks, which will only recoil on their originators with the disgrace which they deserve.

Not a few of my correspondents express regret that the trial did not go through its whole course, even to the award of fitting damages by the verdict of the jury. The possibility of claiming damages was set aside by the acceptance of the full retractation and apology made in court; but I feel, in common with all my correspondents and other friends, that it would have been much better if the trial had not been stopped until the evidence of myself and other witnesses had been heard, so as fully to refute the charges in the libel, which was very insufficiently done in the opening speech of my leading counsel. I have consequently been obliged to publish my narrative as a full contradiction to the libel, now so widely disseminated by the Solicitor-General having read it through in Court.

I have further to express my hope that the sincerity of the retractation will not be vitiated by any renewal of false charges, which might compel me, however unwilling, to again seek the protection of the law. With heartfelt thanks to all my Professional friends, and to you, Sir, for your able support,

I am, &c.

March 28, 1870. C. J. B. Williams.

CHAPTER XXXVIII.

1870–71. REVIEW—WINTER JOURNEY IN ITALY.

Review of Libel Case. First impressions—Shared by Friends—Meetings for verification of facts—Unanimous resolutions in approval of Plaintiff's views and treatment; and to support him by testimony at Trial. Plaintiff also confident, but gratified by noble support of Friends. Defendant's Counsel, finding all evidence and highest authorities against him, makes no defence; but offers unreserved retractation of the libel, and apology for its offensiveness: only pleading in palliation the mental distraction of the author of the libel. Publication of libel without contradicting evidence, rendered necessary publication of '*Authentic Narrative*,' which was widely circulated and generally approved of as quite satisfactory. Numerous special congratulations and expressions of approval.

Daughter's serious illness, happily soon relieved. Tour in Scotland. Visit to Drummond Castle. Winter visit to Italy during Franco-German War. French prisoners at Cologne. Snow-storm at Florence. Milder at Rome. Sunset from Palace of the Cæsars. Naples. Steam from Vesuvius; also, with sulphur, from Solfatara. 'Hollow-sounding' ground, explained by reverberating rocks around. Christmas at Pisa. Setting in of frost and snow. Cold and retarded journey by Pistoja, Parma, and Brenner pass to Munich. Starving journey back to Kufstein for luggage. More obstructions from cold and snow in Germany. Candle bed-warming at Wurzburg. Thaw in England. Comfort of Gulf-stream warmth and moisture, after an Arctic Continental Winter.

In taking leave of the chief subject which occupied the last chapter, I would add a few lines to review the various feelings excited by the onslaught perpetrated by this libel. Astonishment and indignation were my own first feelings, and these were fully shared by all my friends and others, when they came to know the injustice, the untruthfulness, and the ignorance displayed in the attack. The true facts being made known, and the real case clear, friends soon rallied around me. Among the first to move, were Sir Thomas Watson, Sir George Burrows, Sir James Paget, and Dr. Quain; and they were soon joined by Sir William Gull, Sir

William Fergusson, Mr. Erichsen, and Dr. Sibson, (the last having made aneurism of the aorta a special study). These eminent men held several meetings at which all the details of the case were minutely examined and discussed, with the general result of an unanimous approval of my conduct throughout the case, and an agreement to give at the trial their testimony to that effect. Sir William Jenner was not present at the meetings, but signified his adhesion to the conclusions, and signed the declaration.

The comfort and satisfaction afforded me by this noble support was more than I can describe: for although I had the fullest confidence in the good faith of my intentions and a conscientious conviction that I had acted throughout to the utmost of my abilities, yet the blows of the attack were so astounding in their violence, and the false accusations so startling and outrageous, that to be assured by faithful and truthful friends that I was quite in the right, was most gratifying and cheering.

The Counsel for the Defendants, finding such an irresistible array of facts against him, supported by the unanimous opinion of the highest medical authorities in the country,—made no attempt at defence; but after the opening speech from my leading Counsel, which concluded by declaring, with more coarseness than dignity, that 'the plaintiff does not want to put money in his pocket'—he makes his reply, by 'utterly, absolutely and unreservedly' retracting all that is offensive in the libel, with an expression of extreme regret for the pain which it had caused. That there should be an attempt on his part to combine with this retractation and apology, words of excuse for the writer of the libel, in consideration of the distraction of her mind under the agonising affliction of the occasion, was but natural and proper, provided it did not impair the force of the retractation; as, apart from her language of unfounded incrimination, the unhappy mother in her grievous affliction must be an object of commiseration to all.

The trial having been brought to a sudden termination by the Defendants through their Counsel making, and my leading Counsel accepting,—their complete and unreserved retractation

of and apology for—all the charges and imputations in the libel —no opportunity was afforded to me personally to explain the real history of the case, and to disprove in detail the gross misstatements of facts which the libel contained. If I and my witnesses had been examined in court this explanation and correction would have been complete; but my leading Counsel by himself undertook to represent my case in his opening speech, which in the opinion of myself and friends in court he did very imperfectly; and then (as we thought indiscreetly) read the whole libel in court; so that it was published with all its gross language and false statements in the public journals throughout the land. It became therefore absolutely necessary to counteract the misrepresentations and false accusations thus circulated by publishing a true statement of the facts; which was done in the 'Authentic Narrative' already quoted, and from extracts from which the preceding account has been compiled. This pamphlet had a large circulation not only among my own friends, to whom alone I sent copies, but there was a considerable demand for it in various quarters where the matter had excited interest; and the publication went on to a second edition. In this was noticed a silly attempt by a letter to the 'Times,' signed in the name of the Solicitors of the Duke of Somerset, but disavowed by them; (therefore *forged*), impugning the accuracy of some of the statements of the 'Authentic Narrative.' With the following quotation from the preface to the second edition I will conclude the subject, of which the reader can be scarcely more sick, than I am myself:—

'Of the success of my "Authentic Narrative," in completely vindicating my character and professional conduct from every imputation on carefulness, good faith and skill, I have received very many most gratifying assurances from correspondents in all parts of the country, who are unanimous in their approval of my proceedings; and many also applaud the moderation and forbearance which I have shown in defending myself against an attack which was by no means remarkable for those qualities. But my correspondents generally agree that my Narrative was positively required to clear my character in the mind of the public from the charges

which the gross mis-statements of facts in the libel would imply, and which were neither sufficiently refuted in the speech of the Solicitor-General, nor satisfactorily explained by the terms of the retractation. Many regret (as I do myself) that the trial did not go on, through the hearing and sifting of evidence, to the direction and decision of the Judge and Jury; this would have elicited the truth, and settled the matter far more conclusively than any retractation or apology.

The congratulations and expressions of approval and satisfaction which I received at the termination of this affair were too numerous for record; it was most gratifying to me to be assured both by these and by notices in the Medical Journals that by my action and the testimony which sustained it I had vindicated the dignity of the profession, and given a salutary lesson to all—of whatever station—who would dare to insult or calumniate it through evil temper, arrogance or ignorance. Others, especially among my clerical friends, pointedly applauded the moderation and absence of mercenary considerations evinced in the termination of the trial. There were indeed more calls for Christian forbearance than it is necessary to disclose; and I was thankful for messages of peaceful approval sent to me, among others, by the Rev. Dr. Miller, Vicar of Greenwich, and by an eminent and excellent barrister, since Lord Chancellor, through my dear friend and patient, Miss Laura Oldfield.

Satisfactory as the issue of the trial was considered to be, the whole affair was truly a *trial* to both mind and body, and my health was none the better for the worry, anxiety and fatigue which it entailed on me during several months. Happily, I soon became deeply engaged and interested in the completion of the work on Consumption, in conjunction with my son. This, together with the ordinary engagements, soon diverted the mind from unpleasant recollections, and things went on smoothly; until during the summer, one of my daughters returned from the country with an attack of erythema nodosum, which in a few days turned to severe rheumatic fever, affecting many joints, and with very high temperature. It so

happened that I had then a dinner party, and Sir W. Gull was one of the guests. On mentioning to him my daughter's illness, he said; 'Ah well, you must have patience, and let the disease run its course; and all will be well in four or five weeks. It is useless to try to cut it short.' My experience had been different. For many years past, both in hospital and private practice, I had rarely failed to reduce rheumatic fever in from three to six days, by frequent citrate of potass and ammonia salines, and within a fortnight to complete the cure by the addition of bark or salicine. In the present instance, by God's blessing, I was equally successful. In three days all swelling and fever had subsided—the only remaining pains, in the chest and in one hand, were relieved by one hypodermic injection of morphia;—and within a fortnight she was accompanying me in a tour in Scotland.

This tour was commenced by a visit to Drummond Castle in Perthshire, which our friends, Mr. and Mrs. Winans, had taken for the season. Mr. W. J. Winans, with his brother Robert, were the great American Engineers, who during the Crimean War, constructed the principal railways in Russia, and made a large fortune. He had been in bad health, and under several German doctors was considered consumptive. He was recommended to me by Dr. Rogers of St. Petersburg, and entirely recovered his health. He was now with his family enjoying the shooting season in the Highlands. Messrs. Winans were the inventors and constructors of the subaqueous 'Cigarship,' a bold and ingenious enterprise; but I have not heard that it has ever been brought into successful operation.

After enjoying the luxurious hospitality of Drummond Castle, we had to rough it in the crowded and not very comfortable hotels of Pitlochrie and other places in the Highland route; but having already noticed that subject, it is needless to dwell on it further here. Suffice it to say that we returned refreshed by the excursion of three weeks: but after the trying time which we had passed through, we all felt that we needed further holiday and change. This was more practicable now on my part, as my son proved himself quite competent to take my place during my absence. I therefore arranged to devote a month to a short tour with my daughters to Italy, in the

beginning of winter. They had with their mother visited Italy before: but I had never been further south than Milan, and I had yet to witness the sights and treasures of Florence, Rome, and Naples. My time, and the limits of this volume entirely forbid my attempting even a notice of them; and I shall merely give a brief outline of our journey, undertaken, I think in the beginning of December 1870.

It was during the Franco-German War. Paris besieged; and France hardly traversable. We crossed to Ostend and found ourselves during the journey in company with some who had been my patients, travelling south for the winter. Sir George Elliot, and the Archbishop of Canterbury (Tait); and afterwards Professor Owen and Mr. George Pollock, bent for Egypt. In passing Bonn, Cologne, and several other towns, we saw plenty of French prisoners; and the military element bristled up at every station. A year or two before we had passed by the Luxembourg line to Switzerland through Saarbruck and other towns, the thickest seat of the war: but now we took a more northerly route to Munich, whence by the Brenner pass over the Alps we entered Italy, and halting successively at Verona, Mantua, and Padua long enough to see their chief objects of interest, proceeded to Florence, the galleries of which riveted and charmed us for several days. Without attempting to describe these, I would only mention two incidents which occurred. One was a procession of Spanish delegates in superb dresses, come to invite Prince Amadeo to accept the Crown of Spain—an affair more remarkable for pomp and show, than for earnestness of feeling; —the attempt eventually ending in failure. The other occurrence was intense cold with a fall of snow, which made the streets so slippery, that no carriages were to be had to take folks to church (it was Sunday). This appears to have been the first setting in of the very severe winter which followed; but it gave an unfavourable impression of the climate of Florence. The country around was covered with snow: but it disappeared as we approached Rome, which we found mild and calm enough; but without the bright and brilliant sky of the Riviera. One beautiful sunset watched from the palace of

the Cæsars left one of those abiding impressions never to be erased from the memory. In the foreground were the several masses of ruined grandeur, some in deep shades, some catching rich orange tints of radiance from the sun, which were more fully displayed by the cupolæ and domes of the city in the middle distance: beyond these spread the deep blue of the Campagna, out of which, but further still, rose the fairy forms of the distant Apennines, with shades of grey, or blue-grey, and tender traceries of roseate light. Above, the soft Italian sky, blending its graduated tints in harmonising glow.

At Naples we had finer and brighter weather; but not without visitations of cold winds. During the week or ten days of our stay there and in its neighbourhood, I never saw any smoke issue from Mount Vesuvius: only steam in varying quantity; and its cloud vanished into air at no great distance from its point of issue. So likewise of the jets proceeding from the fissures of Solfatara. They appeared to be only steam carrying some sublimed sulphur, which crystallised about the orifice, with an odour of sulphuretted hydrogen diffused around.

I had heard before, and we were told on the spot, that in a field adjoining this volcanic fissure, the ground when struck yielded a hollow sound; and I had read somewhere, (I think in a cyclopædia) that this was an acoustic phenomenon that had never been explained. I think that I succeeded in solving the problem. It was quite true that on smartly striking the ground with a stout stick, the noise of the stroke seemed to be reverberated, as by an echo: this, it was said, was from a hollow under the ground. But the existence of any such hollow seemed improbable. The ground consisted of earth and loose stones, partially covered with turf without anything like a lamina of rock to cover a hollow. I soon found that, without striking the ground, but striking one stick against another, or clapping the hands, would produce the same reverberatory noise. Then I looked around to see if there were any other cause for this echo; and, sure enough, there were several low perpendicular rocks at little distances around the ground, and quite capable of echoing back the stroke, and these echoes in rapid succession are sufficient to cause the

reverberatory noise in question. Any one who has noticed the echo of his steps in walking along a narrow passage between two high parallel walls will understand what I mean. A similar echo is heard when any short loud noise, as the crack of a whip, is made at one end of a row of railings. So I believe that the noise in the Solfatara field was not from the ground at all, but from the surrounding rocks.

We successively reconnoitred Baiæ, Pozzuoli, Pompeii, Sorrento, Salerno, and Amalfi. The roughness of the sea prevented me from studying the submarine colours of Capri. On our return from Naples we viewed from the train the chief phenomena of the remarkable solar eclipse which heralded our return to the cold and sunless regions of the north. We spent our Christmas at Pisa, under the gathering of the snow clouds, and on pushing on were snowed up for two days at Pistoja; blocked out from returning by Spezia and the Riviera; struggled through deep snow at Parma; at night crossed the Alps again by the Brenner Pass, with less snow but more severe frost, and in intense cold arrived at Munich early on New Year's Day. There we found that, by ill-luck, our luggage had been left at Kufstein, the Bavarian frontier, from our not having understood the notice that it was to be examined there. We telegraphed for it to be forwarded; but everyone was so engrossed in the *fête* of the day, that there seemed little chance of getting it: so I started off by the next train back to Kufstein, a distance of 40 or 50 miles; and a pretty day's work I had of it! The same fêting and carousing was going on at every station, in which the conductors, porters, engine drivers, and stokers joined, whilst the poor passengers were kept shivering in the long stoppages, without hot water for the foot warmers, hardly able to get a morsel of food by the way. It was late evening when I got back to Munich, and it was only by a brisk walk from the station that I was able to get warmth in my tired and half-starved body.

I think that I never experienced such cold as that of the journey in which we returned through Germany. There was a long stoppage at one place from the breaking of a spring; (the same thing had happened in a tunnel in the Apennines in Italy) from the intensity of cold, which renders steel brittle.

Through this delay we did not reach Wurzburg till midnight; and frigid indeed was our reception. After a tardy admission to the hotel by the drowsy porter, we asked in vain for a fire, hot water, or food. There were our cold beds, and we must make the best of them. But we had lighted candles, and to get the benefit of their heating power I devised the expedient of putting them into the beds, with chairs to raise a safe frame around them, and then throwing the bedclothes over the whole. In this way in a quarter of an hour the body of air in the bed was warmed, and the bed well aired, and we got rest and comfort. I need hardly add that to make such a contrivance safe, the greatest caution and circumspection was necessary, and I would by no means recommend it for common adoption.

This was an unusually severe season; but this experience of a winter tour made me resolve never to attempt another. From the time of our starting from Pisa, throughout Italy, Germany, and Belgium, we were passing through snow and more or less intense frost; and without sign of thaw, till we reached Ostend. In England we found the thaw universal; and we quite enjoyed the soft mildness of a Gulf-Stream south-wester. People may abuse the dampness and changes of the English climate; but a genial rain is a comfort, and change to a warm fog a blessing, compared with the iron hardness of a continental frost enduring for months with merciless intensity!

CHAPTER XXXIX.

WORK ON CONSUMPTION. 1871.

Contents and Authorship of the several Chapters—By Self—By Son—Favourably received and reviewed—Now out of print—To be republished, therefore only few quotations—Modern researches, not superseding well-ascertained facts—Abstract, on Nature of Consumption—Views not speculative, but practical, and proved successful by illustrative cases—Difficulties from indocility and caprice—Protest. Grounds formed of solid facts, not superseded, but extended, by new discovery—Bacillus—Its existence suspected before. Treatment of Consumption—Retrospect of 40 years—Duration of life increased from 2 years to 8 years. General Summary.

Summer excursion to Eastern Germany. Franzensbad—Scenery—Mud Baths—Mode of Action—Carbonic acid gas bath. Carlsbad—Hot springs—Motley visitors. Traunsee and Salzkammergut—Aussee in Styria. Shooting the Rapids of Traun River: speed without noise. Bavarian Alps—Königsee. Vienna—Professors Rokitansky and Skoda.

Although our winter tour proved far from agreeable in the journey home, on the whole it afforded much refreshment and enjoyment to both mind and body. Space permits me not even to mention the rich treasures of art which we explored as diligently as time would permit in the several places which we visited: but the æsthetic impressions which they produced, and the new material which they supplied to imagination and memory, proved a recreation preparatory for new professional work.

I took up the subject of the Work on Consumption, and with my son's aid the publication was completed by the end of the summer.

The book comprised a preface, and thirty chapters, of which twenty-four were composed by myself, and six by my son. Of those written by myself were:—One on the *Definition and Nature of Consumption*: seven chapters on the *Pathology of Consumption*: six chapters on *Clinical and Pathological*

Varieties: one chapter on the *Physical Signs of Varieties and Stages of Pulmonary Consumption*: six chapters of *Abstracts of Cases, illustrating the Nature, Varieties, and Treatment of Consumption*: and three chapters on the *Treatment of Consumption;* including, *Summary View; General View of Treatment; Antiphlogistic, Tonic, Antiphthisical, and Antiseptic Measures.*

The chapters contributed by my son were respectively, on, *Family Predisposition and Other Causes of Consumption; Hæmoptysis, and the Hæmorrhagic Variety of Consumption; On the Duration of Pulmonary Consumption; On the Palliative Treatment of Consumption; On the Treatment of Pulmonary Consumption by Dietetic and Hygienic Measures; and Treatment of Consumption by Climate.*

The work was very favourably received, both in this country and America, and has now been for some time out of print.[1] As my son is engaged in preparing a second edition

[1] The following are a few out of many notices of the work which have appeared in British Journals:—

'The profession will naturally read with care and great respect the writings of an author of such high distinction as Dr. Williams, and upon a subject to which he has devoted the best years of a long working life. . . . . Dr. C. T. Williams contributes very valuable chapters, also, on palliative, dietetic, and climatic treatment. . . . . The general conclusion arrived at by the authors, and fully borne out by their carefully arranged statistics as to the duration of phthisis, is a very encouraging one, and shows that the gradually improving treatment of the last twenty years has done much to prolong the life, as well as to mitigate the sufferings, of those who are afflicted with this terrible disease.'—British Medical Journal, *Oct.* 5, 1872.

'Among the physicians who have taught the profession to take a more hopeful view of consumptive disease none speaks with more authority than Dr. Williams.' . . . . 'The great step to a better treatment of phthisis has been the recognition of the low vitality of the bioplasm, or as he proposes to call it, the *phthinoplasm* (wasting or decaying forming material) of the tubercle; and Dr. Williams's description of the nature and source of this substance must command general attention.' 'The statistical chapters and the tables by Dr. Charles Theodore Williams are of great value and will repay a careful attention.' 'The grand teaching which Dr. Williams has for the profession is to be found in his therapeutical chapters, and in the history of individual cases extended by dint of care over 10, 20, 30, and even 40 years. The extension of the average duration of phthisical cases from two years to eight is only, let us hope, an earnest of a still more successful treatment yet to come, based on that so authoritatively and amply illustrated by Dr. Williams, who may be congratulated on finding so much in his early teaching established, to set against much in his early treatment which has had to be altered, and on having a son to perpetuate his labours and his name.'—Lancet, *October* 21, 1871.

'The announcement of a work on "Pulmonary Consumption," by Dr. Williams, was received with much interest by the profession; and we are

I do not deem it necessary to give abstracts, (as in the case of the Principles of Medicine which I could not undertake to re-

bound to say that these anticipations, high as they were, are amply justified in the volume before us. That Dr. Williams would bring forward the results of a practical experience, which few or none of his contemporaries, perhaps, could equal, was to be expected; and it was to be expected, moreover, that he should set these forth as a man of candour, acuteness, and steady judgment. It was scarcely anticipated, however, unless it were by Dr. Williams's own personal friends, that to these claims upon our attention he would add those of a thinker familiar with the most recent researches and speculation. . . . . Most fortunately Dr. Williams has retained that mental flexibility and openness to new teaching which enables him to speak authoritatively from both points of view.' WESTMINSTER REVIEW, *Jan.* 1872.

'In the first of the works which we have placed at the head of this article, we find a mass of information and evidence on the whole subject of consumption which could only be the result of the most patient investigation, coupled with the ripe experience of a long life spent in the industrious study of the disease, and in the collection of every fact which could in any way be brought to bear upon its pathology, etiology, or treatment. Thus we are told that for upwards of thirty years Dr. Williams has been in the habit of keeping notes of every case of any gravity in which he has been consulted in private practice . . . . amounting in all to about 25,600 cases. Such an experience in the observation and treatment of one particular form of disease, falls to the lot of but few medical men, and we feel, therefore, more disposed to study with impartial care and attention the records of such a life-long experience than to take up the pen of the critic. . . . . We cannot close the volume without expressing our thanks to both gentlemen for their very interesting work; we have no hesitation in saying that it is one of the most important additions to the literature of phthisis which has appeared within the last thirty years.'—GLASGOW MEDICAL JOURNAL, *Feb.* 1872.

'Dr. Williams, sen., is a man who for forty years has probably seen more of phthisis than any other man in Britain: for more than fifty years he has been in the profession, for the practice of which he was prepared by the teaching of such masters as Alison, Laennec, Andral, and Chomel, and now he has given us the most valuable gift he could bestow, the record of his lifelong experience. We thank him most gratefully for the gift, as a further proof of his love to mankind, in whose service his life has been spent. It is, however, hardly a book to be criticised; it is a work to be studied; and we can assure our readers that it will well repay a careful and studious perusal. The chapters on treatment we cordially recommend, and the whole work is altogether one of the most instructive we have ever had occasion to peruse.'—EDINBURGH MEDICAL JOURNAL, *November* 1871.

'To ourselves, Dr. Williams's chapters on treatment are amongst the most valuable and attractive in the book, and would alone render it a standard work of reference. We can scarcely give Dr. Theodore Williams's chapters higher praise than when we say they are worthy to be placed side by side with the chapters contributed by his father. In conclusion, we would record our opinion that Dr. Williams's great reputation is fully maintained by this book. It is undoubtedly one of the most valuable works in the language upon any special disease.'—MEDICAL TIMES AND GAZETTE, *Nov.* 4, 1871.

publish), but I will quote a few of the most characteristic passages, in reference to certain modern researches, which, interesting and valuable as they are, by no means invalidate the truth of previously ascertained facts, but on the contrary throw additional light upon them, especially in connection with the causation of the disease. The following extract from the Preface will serve as a forecast of the general subject:—

'It is not easy to convey in a few words the views of the nature of phthisis to which I have been led by observation and reflection on the facts and opinions of others, as well as my own; but the popular terms *decline* and *consumption* are the most significant which I can propose to represent them.

'I believe Pulmonary Consumption to arise from a decline or deficiency of vitality in the natural *bioplasm* or *germinal* matter; and this deficiency manifests its effects not only in a general wasting or atrophy of the whole body, but also in a peculiar degradation, chiefly in the lungs and lymphatic system, of portions of this bioplasm into a sluggish low-lived, yet proliferating matter, which instead of maintaining the nutrition and integrity of the tissues (which is the natural office of the bioplasm,)—clogs them, and irritates them with a substance more or less prone to decay, and eventually involves them also, in its own disintegration or destruction. This degraded bioplasm, which I will call *phthinoplasm* (wasting or decaying forming material), may be thrown out locally as a result of inflammation; or it may arise more spontaneously in divers parts of the bioplasm in its ordinary receptacles, the lymphatic glandular system; and then it commonly appears in the form of miliary tubercles, scattered through the adenoid tissue of the lungs.

'I would characterise all consumptive diseases heretofore classed under the terms Tuberculous or Scrofulous, together with the products of low and chronic inflammations, as instances of *lowered vitality of the bioplasm*; and I would strongly insist on their being totally distinct, on the one hand,—from cancer and other malignant diseases, the characteristic of which is a new *kind* of vitality, a new growth, perhaps parasitic, with new organic elements foreign to those of the tissues which they invade and destroy—and on the other hand, distinct also from *total loss of vitality*, death of the bioplasm, which would speedily result in decomposition, gangrene, and putrefaction; to such a result phthinoplasms do occasionally lead, but it is not a part of their common history.

'The preceding imperfect sketch will, I trust, make it apparent that the views thus offered are not barren speculation; but if they prove to be well founded, they are largely suggestive of practical measures. The great indication to sustain the vitality and sufficiency of the bioplasm, by all available means, medicinal, regiminal, and climatic, will be the first suggestion for the prevention and treatment of consumptive disease. A second, equally obvious, will be the avoidance of all influences which may injure the bioplasm, —generally, by deleterious action on the whole body,—or locally, by exciting low inflammations in the lungs and other organs. A third indication, more difficult than others in its fulfilment, is to counteract the injurious effect of the phthinoplasms already formed, and to promote their quiescence and removal.

'It has been our endeavour in the chapters on the Treatment, and in those containing the illustrative Cases, to show how these indications are carried out; and although in the worst and most rapid forms of disease, we have still to confess that medicine is almost powerless, yet in those less overwhelming, and in those more chronic, which happily constitute by far the greater number of cases, we have been able to adduce many proofs (and these might be largely multiplied), that much may be done to mitigate, to prevent, to retard—ay, and even to arrest and to cure,—this most destructive of all human maladies.

'And here occurs an opportunity, which must not be lost—of saying a strong word on what renders the practice of our art much less successful than it might be if it had a fair chance :—I mean the indocility of the patients or of their friends. Our recorded cases may be dry to read, being neither polished in diction, nor sensational in narrative; but they teach this lesson, —that those patients benefited most surely and most permanently, who early, and at reasonable intervals, sought for advice, and who implicitly and faithfully followed it to the best of their ability, during the months or years required by the nature of their cases. On the other hand, only irregular and uncertain improvement ensued where the advice was imperfectly carried out; and relapses, serious and even fatal, resulted often from its neglect. This is an old grievance, and we must not cease to raise a warning voice against it. The cause very much lies in the ignorance and conceit of even the educated classes in medical matters, especially of the aristocracy, many of whom think themselves better judges than medical men; and if they seek advice, neglect to follow it, or capriciously decide to discontinue the treatment—to change the doctor—or, it may be, to try homœopathy, or some other equally absurd form of quackery—at the very time

when the patient's life and recovery depend on the steady continuance of a plan of rational treatment. It is awful to reflect on the numbers of valuable lives that are sacrificed to such ignorance and caprice! and until the public intelligence becomes enlightened to discern the wickedness and folly of this reckless tampering with health and life, our own profession at least should not cease to protest against it. We have difficulties enough to contend against in our endeavours to correct and control the decaying tendencies of the frail body, without having them fatally aggravated by the officious interference of ignorance and prejudice. The treatment of Pulmonary Consumption involves a long watchful struggle with a strong, subtle, and insidious enemy; and to secure any amount of success, the will, the faith, and the hopes of the patient must be persistently and patiently enlisted on our side.'

The grounds on which I had been led to take this decided attitude with regard to the nature and treatment of consumptive diseases, were formed of what I could find to be the best ascertained facts in modern physiology and pathology, arranged and confirmed by the extensive clinical experience of myself and others. That experience had already received the stamp of approval, by the steadily increasing success of its results; but it was open to still further extension or correction by the progressive advancement of knowledge. An example of such new extension has occurred in the recent discovery of the low organism, supposed to be peculiar to tubercle, termed a *bacillus*, an extremely minute staff-shaped body, of a vegetable nature, and which propagates itself by division, and which is said to be capable of producing tubercle in other parts of a living animal. The subject is undergoing extensive and searching investigation at the hands of many able observers: the note below will direct to the most recent information on the subject.[1] The following extract will show that in 1871 my views contemplated the possibility of organic germs being concerned

[1] Koch, 'Berliner Medicinische Wochenschrift.' April, 1882. Watson Cheyne, 'The Practitioner,' April 1883. C. T. Williams, M.D. Lectures on the Relation of the 'Tubercle Bacillus' to Phthisis. 'Lancet,' April 1833. The discovery of *bacilli* was entirely due to their becoming stained with aniline and other dyes, without which they are invisible. My son has shown them to me in many specimens. Verily, they seem the tiniest linear trifles, to have such mighty effects! Nevertheless, search them out, and give them no quarter, till their antidote or *bacillicide* be discovered!

in the causation of some forms of tubercle, although they inclined to the conclusion that the ordinary causes were rather common than specific.

'It remains a question open for further inquiry, what is the influence in the inoculating matter or open wound which appears thus to affect the vitality of the sarcophytes in the part, and make them proliferate in a concrete perishable form, and communicate a like tendency to other sarcophytes in the adenoid tissue of the body through which they circulate? From its infective power it would appear to be of a zymotic nature,—whatever that may be, whether a chemical catalytic force or an organic spore, or germ. And the notion has been propounded, even recently, by Dr. Madden of Torquay, and Dr. W. Budd of Bristol, that tubercles are the result of a specific poison, like scarlatina, typhoid fever, and other zymotic diseases. We are perhaps as yet hardly in a position to accept, or to reject this notion, for there are many facts for and against it, which we cannot afford space to consider at length; but at present it seems to me more probable that the influence which causes tubercle is something more *common* than a specific poison—something more analogous to putrefactive matter, which may proceed from various materials, and even from the decomposition of a part of the body itself. It may indeed be said that putrefaction and other low kinds of decomposition are promoted, if not produced, by the presence of vibriones, bacteria, and other septic organisms; but if so, it is in the way of common corruption, and not through any specific agency engendering, or engendered by, disease.'

I conclude this notice with one more extract, from the Summary View of the Treatment:—

'On taking a retrospect of an experience of forty years in the treatment of Pulmonary Consumption, I can trace a remarkable improvement in its success, as judged by the results. During the first ten years of that period, the beneficial results of the treatment were very limited, being chiefly confined to the incipient cases, and to those patients who were able at an early stage and for long continuance to resort to more favourable climates, such as can be obtained by voyages to Australia or India. My general recollection of the histories of the developed disease at that time is that of distressing tragedies, in which no means used seemed to arrest the malady; the tardative and palliative treatment employed was little satisfactory; and life was rarely prolonged beyond the duration of

two years, assigned by Laennec and Louis, as the ordinary limit of the life of the consumptive.

'In the next period of ten years (from 1840 to 1850) a marked improvement took place in the results of treatment, apparently in connection with the allowance of a more liberal diet, and the habitual use of mild alterative tonics, as they might be termed, particularly iodide of potassium with sarsaparilla or other vegetable tonic. It was in the latter half of this period that chemists began to produce cod-liver oil of sufficient purity and freshness to be fit for the human stomach; and I have no hesitation in stating my conviction that this agent has done more for the Consumptive than all other means put together. And so far is this remedy from having "had its day, and gone out of fashion," that in my experience its usefulness and efficacy have gone on increasing in proportion to the greater facilities for obtaining it in a pure state, and to the improvements in the manner of administering it, in combination with various tonics, and in connection with certain rules of diet and regimen. Many of the cases narrated in the preceding pages are striking proofs of the efficacy of this remedy, not only in the general results of cure or prolongation of life, but also in detached passages of the abridged histories in which improvement or deterioration in the symptoms corresponded respectively with the regular use of the oil or its discontinuance.'. . . . 'When I say that the average duration of life in Phthisis has during my experience of forty years been at least quadrupled, or raised from two to eight years—I say what is below the actual results, as calculated by my son; for of the 1,000 cases, 802 were still living at the last report, and many of these are likely to live for years to come.' . . .

'The following may be given as a brief general view of my usual plan of treatment. As we have been led to conclude that consumption is essentially a disease of degeneration and decay, so it may be inferred that the treatment for the most part should be of a sustaining and invigorating character. Not only the most nutritious food aided by a judicious use of stimulants and of medicinal tonics, but pure dry air, with such varied and moderate exercise in it as the strength will bear, and the enlivening influence of bright sunshine and agreeable scenery, and cheerful society and occupation,—are among the means best suited to restore and repair the defective functions and structures of frames decaying and prone to decay.'

I fear that my unprofessional readers have had reason to complain of the decidedly technical character of this chapter,

however important its subject. I trust that they may find some relief in a brief notice of some points of interest in an excursion to Eastern Germany which I took at the end of that summer, (1871). I joined my daughters at Franzensbad, where one was under the care of Dr. Cartellieri, a principal physician of that watering place and proprietor of an establishment of *Mud-Baths*. He was introduced by my friend Dr. Sutro,[1] but I found that my name was quite familiar to him, for my works were text-books at the schools when he studied auscultation. I suppose there must be something very efficacious in the waters and baths of the place; for there is nothing attractive in the scenery. The country, almost flat, or with only low hills, and a few tumuli, which have the credit of being extinct volcanoes,—has its only charms in gardens and some pretty woodlands in the neighbourhood. The efficiency of the water, as a mild aperient, depends chiefly on the Sulphate of Soda, in which it is far surpassed by Marienbad, also a cold spring, but with more interesting scenery around it. The chief characteristic of Franzensbad lies in its mud-baths, composed of bog earth carefully mixed with the water of the mineral spring, and made comfortably warm. Dirty as this 'wallowing in the mire' must seem, it is said to be quite luxurious to the feeling—poised in a medium of velvet softness, and excluding all that can worry or irritate. The doctors do not seem to be very profound or exact in the philosophy of the subject. They have a vague notion that besides their balneological effect, the baths may owe some of their efficacy to the absorption of some of the elements of the bog earth and mineral water. That iron is ever absorbed seems very doubtful. More probably a nascent sulphuretted hydrogen may be evolved from the decomposition of the sulphates of the water with the hydrocarbons of the bog earth. The equably warm feeling from the mud may be explained by the somewhat similar effect of bran or gelatine, in retaining the temperature of baths. Carbonic acid gas is evolved in

[1] I was for many years in the habit of meeting Dr. Sutro in consultation, chiefly in the city, where he resides, and has a large practice. He wrote an excellent work on the spas and health resorts of Germany and other countries, which he was so good as to dedicate to me. I used to refer to him as one of the best London authorities on that subject.

such large quantities at one of the springs, that it is used as an air bath, by being allowed to accumulate in a sunk floor, on which the patients take their seats, whilst the gas rises up to their waists. Dr. Cartellieri told me that he found these gas baths sometimes locally useful by an operation, soothing to the nerves, and stimulating to the blood-vessels. It was necessary to strengthen the faith of sceptical patients by demonstrating the existence of the gas, by extinguishing in it a lighted match, or by making its surface visible by smoke from damp brown paper.

We found hardly any English visitors at Franzensbad; my friend the Duchess of Buccleuch was the only one we knew.

Carlsbad I found much more interesting both in physical conformation and in scenery. The whole place seems to take you by surprise, as with a turn or two you descend into its deep and narrow gorge, and find a close aggregation of buildings terracing its sides, and the crowded houses clustering on either bank of its rocky river-bed, from beneath which spring up its geysers sputtering and steaming like something full of activity and power. The motley strangeness and variety in the costumes and features of the inhabitants strike you at every turn. With a strong predominance of the Hebrew element, you have not only the Bohemians of the country, but Hungarians, Poles, Russians and sundry other samples of the peoples of Eastern Europe. The place enjoys great reputation, and is always overcrowded in the season. The waters are supposed to cure everything; but they are really potent—for good or for harm, according to the skill with which they are used. Gout and liver diseases are the maladies in which they are most successful; and yet I have known not a few cases of both these complaints which have only become worse at Carlsbad, but eventually recovered under careful medicinal treatment at home. I found Professor Seegen a courteous and intelligent expositor of the practice of Carlsbad.

On quitting these Bohemian watering places, we visited the picturesque country of the Salzkammergut in the Austrian Tyrol, passing by Gmunden, with its beautiful Traun lake and mountain, to the picturesque variegated highlands of Ischl.

The country abounds in salt mines and salt baths. By invitation I visited Dr. Schreiber's Sanatorium at Aussee, which comprises establishments for salt bathing, for milk-cure, and for residence in mountain air. The house stands on a pleasant slope near a little lake, well sheltered, with woods and rocks behind, at a little more than 2,000 feet above the sea. Dr. Schreiber told me that it was a favourite resort of Professors Skoda and Rokitansky of Vienna, and is conveniently placed for patients from that city.

On returning to Gmunden by the lake, we got the opportunity of descending the rapids of the Traun river in a salt-barge, and quite panted with delight in the adventure. These barges, in which the salt from the mines is sent down the river, are little better than rafts, rather loosely put together, to give them pliancy for sliding over the rocky shallows, and in yielding to the turns of the current. Seated on a plank resting on the salt-cones, (shaped like sugar-loaves), my daughters, with their maid and myself, prepared to 'shoot the rapids' of the Traun-fal. Four men are fore and aft with long poles to guide the barge;—and off it goes! at rapid rate, swiftly darting down the straight stream, bumping over the shallows, whirling round the windings, and darting with breathless haste down the steeper falls—till floating smoothly to a level, in an incredibly short space of time we were sped to our torrent journey's end, and except a little timidity in the maid, we all (as my dear youngest daughter expressed it) 'exceedingly enjoyed the fun!'

No doubt a slight tinge of danger may have given zest to the adventure, and the bumpings against the sides and shallows were by no means gentle, but what was delicious and inspiring in the motion was to be thus borne through such beautiful scenery so swiftly and yet so silently,—that but for a momentary rush or ripple of the rapid stream, we might imagine ourselves flying through the noiseless air!

When we came to exchange this liquid flight for the rail at Lampach, what contrast in the noise, the smoke, and the dust of the iron road! To travel with speed, in truth we have attained; but when will science and art attain such mastery over matter and motion, as to annihilate or utilise *noise*—

destroy *dirt* or put it in its right place—and banish darkness by turning its cause into light and heat? [1]

We went on to Vienna; but before pursuing that subject, I will briefly allude to the Bavarian Alps, close at hand, which we visited not now, but in a former tour. There is no scene in the whole of Switzerland, which, in my opinion, equals in beauty the Königsee. After a drive of sixteen miles from Saltzburg to Berchtesgaden, overtowered by the snow-capped mountain, the Watzmann, we come by a narrow defile to the lake, and are rowed by women in a large boat. The speed lately described as so delightful we have not—nor do we want it, for the scene on which we enter is so entrancing, that we love to linger in its solitudes. On the right the cliffs rise higher in perpendicular walls, fringed here and there with lofty pines. On the left the land first slopes in lovely pastures of varied tints, but these soon give place to richly wooded hills; and then the lake is landlocked all around, with colossal walls of limestone cliffs terraced by verdant turf, and overtopped by the grey shadows of the Watzmann, patched with snow. At the far end of the lake is seen the small hunting château of the King of Bavaria, reflected in long vanishing lines in the still lake with the deep blue shade of the lofty mountains behind. We rowed to this upper end and found a turn into a second small lake beyond, with lower banks, but lovely beyond description in the varied tints of its trees of autumnal foliage. The special points which give transcendent features to this charming scenery, are the abrupt and varied elevation of its stupendous cliffs, the contrast of deep shades with lively lights and colours, and the calm stillness of its sheltered lake, reflecting surrounding objects in exquisitely softened beauties. We found minor charms but interesting features, also in the Tegernsee and Achensee.

My chief objects in Vienna were to see Professors Rokitansky and Skoda, but unfortunately I was unsuccessful. Our calls were made and returned, but we missed each other, and I had

[1] Lord Palmerston enunciated a wide truth when he defined '*dirt* as matter in the wrong place.' It is not less true that *noise* is *force wasted*; and (although the problem varies), that much of what is *darkness* might be turned into *light*. If the world lasts long enough, all these will be rectified.

not time to pursue the matter by going to their hospitals. I had a great respect for Rokitansky. Our views in pathology were much alike, and although I had the advantage in point of priority, his long and extended devotion to the subject had rendered him a more complete master of the situation. I was very desirous of discussing with him my more advanced views on tubercle, which so far as I know were never brought under his notice. I should also have been glad to have conferred with Professor Stricker in reference to any application of his observations on the effect of heat on the amœboid properties of leucocytes. With Professor Skoda, I had a little controversy of several years' standing, and I greatly regretted having missed him when he called on me in London, as well as on the present occasion. I flatter myself that with a few simple acoustic experiments, we should have come to a better understanding about tubular sounds, and what he calls 'consonance.'

We concluded our tour by visits to the cities of Prague and Dresden; but although deeply interested in the picturesque antiquities of the former, and in the abundant and beautiful art treasures of the latter, their memoranda can hardly claim a place at the end of a long chapter.

CHAPTER XL.

ATTEMPTED CHANGES IN THE ROYAL COLLEGE OF PHYSICIANS. 1872–74.

The College on losing its executive authority, extends its licensing powers. Grants licenses for general practice, and gives to former licentiates title of Members, but without increasing their privileges, except in promotion to Fellowship, which difficult. Spirit of exclusiveness among Fellows. Diminished promotion of members. Statistics of College and country prove that many physicians do not own the College—Reasons asked and stated. Suggestions for making College more liberal and comprehensive. Selfish opposition of exclusives. Suggestions made to President and College—Summary of history and objects of the College, its abuses, and their remedies—Proposal of a liberal and conciliatory policy—True objects of the College of Physicians. Effect of suggestions. Increased admission of Members to Fellowship.

Increasing inaptitude for public debate through deafness. Attacks of earache in early life. Successful treatment and preservation of hearing, for fifty years.

Concluding reminiscences of the College List.

My dissatisfaction with the constitution and management of the Royal College of Physicians has been particularly recorded in Chapter XX. Several changes for the better had taken place since then; and although the College had been deprived altogether of its executive and compulsory powers, it had extended its operations as a licensing body by undertaking the examination of a new order of Licentiates, such as those who had previously obtained a qualification from the Society of Apothecaries. The former order of Licentiate physicians were now to be termed Members,—a concession unavoidable on the admission of a lower order, who might or might not be physicians, but were supposed to be qualified for general practice. The change of name from licentiate to member might be supposed to be satisfactory to the physicians con-

cerned; but the satisfaction was qualified on its appearing that the name brought with it no privileges of membership. Although called members they had no voice, no vote, no admission to the deliberations, or share in the offices or management of their own corporate body. All these were still reserved as the exclusive privileges of the fellows. They were admitted to the library and to the lectures; but so were the licentiates. The only one point in which the new members had any advantage, was that possibly they might be chosen for the fellowship. But where lay their chance of getting that privilege? Might not the members at least represent themselves, and vote for the most worthy out of their own body? So far from it, they must not stir in the matter, and are expressly forbidden from canvassing among the fellows, who are to be absolute autocrats in the whole transaction! And what community of feeling is to be looked for from those who had hitherto so long prided themselves on their own exclusive privileges?

For several years I held aloof, watching how the change would work; but I took a foremost part in recommending deserving members for election to the Fellowship. There had been a year or two of *grace* (the exclusives called it *disgrace*) in which a large number of physicians of a certain standing were elected members without examination to replenish the scanty ranks, and gave opportunity for further increase of fellowships. But there existed still much of that spirit of exclusiveness which aimed at limiting the honours and powers of the College to a few, instead of distributing them as widely as possible, wherever they were really merited. Then there were complaints of partiality and unfairness as to those who were elected; deserving seniors being passed over, and juniors preferred, if they happened to have friends among the Fellows. Not above half of the members proposed by myself and other fellows, were elected. The whole number of new fellows elected, which in 1870 had risen to 24, in 1871 and 1872 fell to 5 and 13. And this for all England! Could it be supposed that in these small numbers the College was really representing the whole annual addition to the most highly qualified physicians of the country? The question drove me to

statistics so far as they could be found in lists of the College of Physicians and the British Medical Directory.

The College list comprised :—

254 Fellows.
535 Members.
54 Old Licentiates.
131 Extra Licentiates.
719 New Licentiates (General Practitioners).

The numbers of Doctors of Medicine registered in the British Medical Directory amount to thousands; but the greater number of these, although nominally physicians, are in fact general practitioners, combining surgery, midwifery, and pharmacy with medicine in their practice. Such are not the physicians answering to the description of those of the Royal College. And they may be distinguished by their having some or all of these initials appended to their names : L.S.A. (Licentiate of the Society of Apothecaries), M.R.C.S. (Member of the Royal College of Surgeons), or L.R.C.P. (Licentiate of the Royal College of Physicians) ; all such, and also Officers of Unions, should not be entitled to rank as Physicians. But all others designated as doctors of medicine, especially if also Physicians to Hospitals, have a fair claim to be considered as physicians, and to be affiliated to the Royal College. But, as a matter of fact, I found no fewer than 682 names, answering to this description, who did not belong to the College at all. Of these, between sixty and seventy were known to me, either personally, or by repute, to be practising physicians. Many were Physicians to Hospitals, and other public Institutions; many were authors of published works; several were Fellows of the Royal, and other scientific and literary societies ; and not a few were Justices of the Peace and Deputy Lieutenants of their counties. I could perceive no reason why these should not all belong to the College of Physicians; and although I had not the same knowledge of the remainder of the 682 doctors of medicine named in the Directory list, there was nothing mentioned in that list which ought to disqualify them.

It seemed to me quite anomalous that whilst nearly a

thousand physicians were embodied in the College that yet there were more than half that number of doctors of medicine practising in England as physicians, without any connection with it. By way of inquiring further into the matter, I wrote to some half-dozen of the most distinguished of these provincial physicians, with whom I was acquainted, to ask them their reasons for holding aloof from the College, as I was anxious to make a movement towards devising measures for making the College the representative head of the Physicians of the country. One of the replies was as follows:—'My reasons for not caring to join the College of Physicians were simply, 1st, that it was a costly process; 2nd, that it was a useless one. I did not know of any advantage, or even honour, which would accrue to a provincial physician by belonging to that body. . . . I wish success to your attempt to move this inert mass.' Other replies urged sundry causes of dissatisfaction with the constitution and management of the College, but intimated the possibility of a change in their views, if they should see signs of improvement in the spirit of the governing body—less exclusiveness and self-aggrandisement, and more liberal consideration for the members in general, and for the scientific and benevolent objects of the profession.

I was far from sharing the opinions of those recusants who condemned the College as useless and incorrigible. On the contrary there had been many changes for the better in its management, and several attempts had been made to conciliate the feelings of the profession and to extend its influence. I felt strongly that much more ought to be done in the same direction. But there were a few among the fellows, and those the most active, who under the plea of keeping up the dignity of the College, and making it select and refined, generally opposed all liberal concessions, such as the raising of members to the fellowship, and were for reserving that honour only for physicians of the highest distinction. It was in vain that I reminded them that the College was established to comprehend and incorporate the physicians of the country, not to be only an inner circle, like an exclusive club among them; and that so far from limiting the numbers, it ought to be ready to receive all who

should prove themselves to be thoroughly qualified and worthy physicians.

My excellent friend Sir George Burrows was at that time President of the College, and just and liberal-minded as I had always found him in spirit and in act, I made known to him some of the results of my inquiries on this subject, and of the views which I had been led to entertain respecting the affairs and duties of the College. In his reply he begins 'I have read your important communication with great interest, and assure you that I am by no means averse to the principle advocated by yourself—viz. the admission of a large number of members to the fellowship.' He promised to make my views known to the council, but without committing himself to any decided course of action. I had to follow this up by bringing forward motions at the meetings of the Fellows, on several subsequent occasions; but without publishing these and the consequent discussions, which are supposed (but not declared) to be among the 'secrets' of the College, I insert a summary which I wrote at the time, and which gives an outline of the case as I viewed it.

The Royal College of Physicians of London was originally instituted to ensure proper qualification and regulation of those practising medicine in London and provinces, for the good, as well of the public, as of the profession. Although worthy and distinguished names have adorned the College list from its foundation to the present time, yet as a college, soon and ever since, the power and privileges conferred on it have been abused by restrictive and exclusive by-laws, to the advantages of few *fellows*—to the disadvantage of the many practitioners,—and to the neglect of the wants of the public. Consequently physicians always remained few; and care of the public health devolved on a lower grade, of whom the College disdained to take cognisance, *surgeons and apothecaries* (originally *barber-surgeons*, χειρουργοί—*hand-workers*) and ἀποθηκάριοι—shopmen—drug-sellers. These in course of time, educated up into general medical practitioners, supplied to the public the skilled aid, which the College of Physicians had failed to furnish. The College in the meantime, instead of leading and directing the whole medical profession, was engrossed with enhancing and enforcing their own collegiate privileges. Among other dubious enactments were the election of the President by the *Elects*, and the restriction of the fellowships to a few—generally

graduates of Oxford or Cambridge. The consequence of this exclusive policy was that not only the chief practice of the country passed into the hands of the surgeons and apothecaries, but that numbers of other physicians, graduates of Scotch and other Universities, established themselves, in defiance of the College, throughout the provinces and even in London itself; so that the corporation was forced to call the law to its aid to defend its privileges, and by no means with a conclusive result. At this period, between forty and fifty years ago, the College was at its lowest point of popularity and influence, and at one time became so straitened in finances, that a subscription among the Fellows became necessary to meet its current expenses. After this there were some signs of a more liberal policy. A few of the most distinguished Licentiates were admitted to the fellowship. In a few years this number was increased, and the exclusive privileges to Oxford and Cambridge graduates abrogated. The effect was an increase of the number of entries to the College; but the change came too late to enable it to retain the privileges of its original charter. The change of title from licentiates to members was merely nominal, for it was accompanied by no privileges of membership, except the possibility of being promoted to the fellowship, which has hitherto been too sparingly acted on, and this is the point to which I particularly wish to direct the attention of the Council. The College acted wisely in two of its most recent acts:—1. The free admission of many members during a *year of grace*: and 2. The resumption of its original functions in establishing examinations for a lower order of practitioners, under the title of licentiates. But there is a risk of this latter measure acting injuriously on the members, unless the superior privileges of these are maintained by their being freely admitted to the fellowship, as soon as their standing in the College and their position in the profession entitle them to it. I maintain that the admission of members to the fellowship is to be regarded not as an exceptional distinction to be attained only by a favoured few, but as an honour open to all who, during a certain number of years, by their skill and success as physicians, and by their general unexceptional and honourable conduct, prove themselves worthy of it.

I propose therefore in the first instance to carry out this principle by nominating as many of the members of ten years standing and upwards, as in the opinion of the Council have proved themselves able and worthy physicians. As much as possible should be avoided the invidious practice of nominating juniors to be placed over the heads of those who have grown grey in the cold shade of exclusion. There may be a few exceptional cases of transcendent

merit deserving such distinction; but as a matter of justice and policy, honours should be first conferred on the seniors in the profession: the deserving juniors will be sure to succeed in due time. . . . . From communications which during several years I have had with physicians in the College and out of the College I am convinced that the present mode of election to the Fellowship—niggardly, capricious, and open to imputations of partiality or favouritism—has been the chief cause of discontent within the College, and of repulsion of physicians without; and I would strongly urge on the Council that the Fellowship ought to be viewed not as an honorary distinction to be conferred only on physicians of transcendent merit, but as the full completion of the membership to which all may look forward to attain by a sufficient standing and an honorable career in their profession as physicians. If it is thought desirable to elect also to the Fellowship younger physicians of exceptional merit, I would open another door to them by examination, after the example of the College of Surgeons, but it would be expedient to restrict such admissions to a small number annually.

By the adoption of such liberal and conciliatory policy, the College would do much to satisfy its present members and offer inducements to other physicians to join its ranks—so that it may become a national institution, fairly entitled to stand at the head of the Medical Corporations of the country and to acquire the authority and influence in the State that should properly belong to the representative head of the most learned and scientific branch of the profession.

My movement caused no small stir in the College, and brought on me from some quarters the imputation of a desire to make the College too common, and to promote a *levelling downwards*, which would certainly be the very reverse of my intention. I had always advocated a high standard (and strict examinations on essential matters for all junior candidates) for admission to the membership; but being admitted, let there be no bar to the members to rise in due course to their full proper dignity.

Although I did not succeed in effecting any great change in the restrictions which had been complained of, yet there was a general acknowledgment that it was the duty of the Fellows to do all in their power to encourage the admission of deserving members into their body and so to sustain and increase the influence of the College: and resolutions were

passed to issue periodically addresses to that effect. I had also the satisfaction of seeing a great increase in the admissions to the fellowship, which were about 20 annually, in that and the following two years: I had myself recommended as many as one-third out of the whole number.

It was during these debates at the College of Physicians that I began to experience the inconvenience of an infirmity which would soon deprive me of all further capacity to take part in such proceedings. My hearing had been brought into extraordinary requisition during my whole professional life, and through God's goodness it had been granted me in fair perfection during the greater part of that period. In my childhood I was subject to attacks of inflammatory earache which often left a temporary deafness; but this tendency diminished when I grew up. It did not however pass away entirely; and both in Edinburgh and afterwards in London, I had several attacks, which sometimes affected both ears, with a succeeding deafness lasting two or three weeks. I soon learnt how best to prevent or arrest them; and I did not shrink from resorting at once to very strong measures, for with the warning of a deaf mother before me, I knew that I was in danger of deafness for life. How great the mercy of God to save me from that trial! But for that mercy how would all my prospects have been blighted! . . . .

The first effectual remedy was prescribed to me by Dr. Andrew Duncan, junior, Edinburgh, himself a sufferer from the same complaint. It was the Tartar Emetic ointment of Autenrieth, which had just been brought into use (1821). But to make it effectual—to bring out pimples on the skin by friction in two or three hours—I found it necessary to increase its strength—or better, to use a saturated solution of tartar emetic in hot water—and with this to rub freely on the neck behind and below the affected ear, and to repeat the rubbing in two hours if necessary. Generally after one rubbing, in an hour or two the skin becomes of a vivid red, and in two or three hours numerous pustules break out, and the relief is complete. Of course there is a very sore neck after, which may not heal for several days; but what is that in

comparison with dreadful earache for two or three days, and probably deafness for weeks after? I had already tried all sorts of common remedies, and proved their impotency. I afterwards substituted for tartar emetic, croton oil, but not with equal success. But by the advice of Mr. Maule, the aurist, I tried cupping behind the ear, and that proved quite effectual in both relieving pain and preventing deafness, provided it were used within an hour or two from the commencement of the attack. The abstraction of 6 or 8 ounces of blood was sufficient. It entirely removes the inflammation and there is no discharge after: but under the slower action of tartar emetic, there is sometimes discharge but no pain.

One of the last attacks of this kind which I had was in the winter of 1841 or 2. I had driven to see a patient at Moulsey opposite Hampton. The Thames had overflowed, and I had to walk some distance in the wet. In returning in the carriage with wet feet, I began to feel my enemy as I approached town. Instead of going to my lecture which was due, I drove straight to Watkins the cupper, got complete relief, and then delivered my lecture. I think that I got rid of the tendency to these attacks by constant care, to protect the ears, to keep the feet dry and warm, and in case of incipient colds,—to resort at once to one or other of those remedies for colds described in Chap. X.

After all these early attacks, my hearing was good for all the purposes of auscultation for upwards of forty years. It was never very keen for very distant sounds. Neither do I consider that my ear was finely *musical*. I had enough ear for music to enjoy it and to be able readily to learn a tune by ear, and to quickly detect anything out of tune: but I seemed to lack the fine musical sense which enables one to pitch a note exactly, and to execute a succession of notes with perfect correctness without an accompaniment. On the other hand, I seemed to have a perfect appreciation of common noises, or non-musical sounds. My puerile faculty of imitating the language of the poultry yard,[1] and a turn for the mimicry of odd notes and inanimate noises seemed to give the ear a familiarity with them that made them not only audible but

[1] See Chap. I.

intelligible. This is a faculty hard to describe; but it seemed this which gave me so keen a ear for the signs of auscultation.

The deafness came on first in the left ear with loud tinnitus or ringing, which has been already mentioned in Chap. XXXIV. I had hardly ever used it in auscultation, and its more complete closure, by shutting out all external sounds, rather helped the hearing of the sound ear; but it debarred me from the use (if any) of the binaural stethoscope. And although in public assemblies and lectures, I began to find a general difficulty in hearing during this year, 1872, I did not lose the auscultatory power of the right ear until several years later.

In turning over the pages of a former list of the College of Physicians two or three names have occurred to me as calling for a passing mention of reminiscence.

At the head of the list of members stands the name of Hananel De Leon, M.D.Edin. who became a member in 1821, and is, I believe, still living. I knew him well in 1840, when he used frequently to attend my practice and clinical lectures at University College Hospital. He was a Jewish physician who had just retired from an extensive practice in Jamaica; and he introduced to me many of his patients and relatives. He was quite an assiduous student in the wards, and whilst he studied auscultation, I was glad to avail myself of his large experience in the treatment of disease. I recollect a case of ulceration of the cornea in which his advice to add iron to quinine proved very beneficial in the treatment. I presume that he has declined the fellowship which surely must have been offered to him.

My excellent friend Dr. John McLennan was another retired physician, who after a very distinguished career in the Bombay presidency in India, still found keen interest in pursuing the science of medicine in University College. With several members of his family, he was also my patient, and was a remarkable example of the efficiency of bromide of potassium in relieving and warding off epileptic attacks in connection with cerebral disease. I have not the notes by

me, but the attacks, which were frequent at first, were entirely suspended for some years by the remedy till the fatal apoplectic seizure which eventually carried him off.

Sir John Rose Cormack passed through a long life chequered with many chapters. After serving for several years as surgeon in the army, he settled in Edinburgh and established a monthly medical journal. He then quitted the North and took the general practice of the late Dr. Charles of Putney, disposing of his journal to the late Professor Hughes Bennett, who carried it on for many years. Industrious with his pen and fond of journalism, he started the London Monthly Journal of Medicine, and laid me and many friends under contribution to help him: but after two or three years of good promise, he was obliged to give it up. Subsequently for a time he edited the Provincial Medical Journal. One of the modes in which I gave him efficient aid was by introducing to him as assistant my former diligent pupil and clinical assistant Dr. Alexander Henry, whose unflagging intelligence and industry has been ever since most serviceable in co-operating in the publication of the British Medical Journal, now become a gigantic National Institution, under the able editorship of Mr. Ernest Hart. Dr. Cormack did not succeed well in practice, and soon left Putney. After trying other places in France, he settled in Paris, with some better success. But what seemed most propitious to his flagging fortunes, was the siege of Paris, wherein he partook of the privations and trials of that distressing ordeal: and they drew forth his energies and resources with such effect, that he and his colleagues became quite heroes of the occasion, and he won many honours and acknowledgments. With the *éclat* thus worthily earned, and an improved position in connection with the British hospital founded by Sir Richard Wallace, he seemed in fair way of more success in his declining years, but they were darkened by family afflictions, and soon terminated in death. An amiable man of enterprising and industrious disposition, he wanted firmness and strength of character necessary to ensure success.

Among the more liberal-minded of the original senior Fellows of the College I would count my old friends Dr.

Frederic Farre and Dr. Alfred Henry Pitman, many years our respected and beloved Treasurer and Registrar. To the latter, also Representative in the General Council of Medical Education and Registration, I would wave my cordial congratulations from afar on his recent reception of the well-deserved honour of knighthood.

CHAPTER XLI.

CLINICAL SOCIETY OF LONDON. 1867. PRESIDENCY OF THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY. 1873–5.

Expansion of Art requires new institutions. Clinical Society of London—Initiated by Dr. Greenhow—Objects not attained by other Societies—Multifarious means and ends in Clinical Medicine—Clinical Society successfully established and carried on.

Author's election to the Presidency of the Royal Medical and Chirurgical Society announced by Mr. T. B. Curling. Utility and value of this society, founded by Dr. Yellowly and others. Its Transactions and valuable Library. Discussions more learned than lively. Success of Conversazione—Artistic excellence in the profession. Extracts from Anniversary addresses, 1874. Obituary Notices—Baron Liebig—Dr. Bence Jones—Sir Henry Holland—Dr. W. H. Fuller—Reflections on professional lives shortened by overwork. Exhortations to liberality and large-heartedness in all public Institutions. Obituary, 1875. Dr. Anstie—Sir J. R. Martin—Reflections on sacrifices made by medical men in public service. Reply of Council to message from Society for Prevention of Cruelty to Animals. Physiologists alone can be competent judges. Justification of practice of vivisection for scientific and humane purposes, by reason and truest benevolence—and by Divine Authority. Concluding thanks.

The aphorism of Hippocrates would be a better motto for the Royal College of Physicians, with an addition: "Ὁ *βίος βραχύς, ἡ δὲ τέχνη μακρή*"—*καὶ μεγάλη*. The brevity of life, compared with, not only the length, but also the breadth—the largeness—of art, inculcates the lesson:—the shortness of life warns us that 'whatsoever our hands find to do, we should do with all our might,'—activity in well doing superseding all idleness, apathy, and self seeking. The length and amplitude of art should open our minds to the greatness and endurance of its objects, and shut out narrow and short-sighted views. When the infirmity of deafness crept upon me to warn me that my active professional life, after merciful prolongation, was drawing to a close, whilst art—all arts—and not less than others, *our art*—are lengthening,

widening, expanding in every way, towards the fulfilment of the Divine commands, to subdue the earth, to heal the sick, and to turn to their proper use all God's good gifts to man—in prospect of retirement, whilst humbly trusting that I had not altogether laboured in vain—apart from personal considerations, I could not but feel interest in the success of the future, and be ready to promote and bid God-speed to any plan or proposal for the advancement and enlargement of our art.

It was with these feelings that I welcomed the proposition, first brought forward by Dr. Headlam Greenhow, to establish a Clinical Society in the year 1867. Himself a hospital physician, and in extensive private practice, he had felt, in common with many of us, that clinical medicine, almost a new development of the healing art—and one which, mounting on the wings of advancing science, had attained wonderful dimensions and capacities—also ought to have its proper arena of debate, and its medium for the publication of its proceedings. The venerable Royal Medical and Chirurgical Society was already fully occupied with its sundry profound and elaborate subjects; and valuable as both its Proceedings and Transactions are, they must be admitted to be somewhat of the slow-coach character, and hardly fit for the quick and ready reports of clinical practice. I have already testified to the utility of other popular societies, the London Medical, the Harveian, and the Hunterian, and most interesting and serviceable they all are in their way, but this is rather of the *quid nunc* or *omnibus* character, for the casual topics of the day, than as exponents of an important department of medicine which was yearly advancing in activity and precision.

Early initiated as I had been in the regular and systematic study of clinical medicine both in Edinburgh and in Paris, I was surprised at the backwardness of the London schools in this particular when I first visited them.[1] But for many years they had fully retrieved their character, and were now second to none in the world in the knowledge and practice of all the most improved methods of investigation. Not only are divers new instruments now required in the investigation of disease—for the purposes of auscultation (stethoscopes, plessimeters, &c.)

[1] See pp. 27 and 274.

mensuration, and weighing (spirometers, stethometers, cyrtometers, hydrometers, and other meters of size and weight); eye, ear, and throat inspection (ophthalmoscope, otoscope, rhinoscope, laryngoscope, endoscope, and other *specula*); heat and pulse measuring (thermometers, sphygmograph); chemically and electrically testing (chemical apparatus, galvanometers, &c.), and so forth;—but also plans and charts of registration, enumeration, tabulation, calculation, and correction —are necessary, to deal with and work out the results, according to the most approved numerical and statistical methods. This is the work that conscientious and diligent medical men now have to do; and who can refuse them all the aid, comfort, and encouragement they can get from frequently bringing their reports and cases for discussion and publication through a society expressly constituted and established for the purpose?

Dr. Greenhow did not make his appeal in vain. One hundred members were enrolled in the first year, and more than double that number have since joined its ranks, almost all being also Members of the Pathological Society, of which this was, so to speak, the more lively complement. The acceptance of the office of First President by the acknowledged head of the Profession, the venerated and beloved Sir Thomas Watson, stamped its success; and it became at once as popular as the Pathological Society had been at its foundation. The subsequent presidents, each elected for two years, were Sir James Paget, Sir William Gull, Mr. Prescott Hewett and Sir William Jenner, before I left London. Dr. Greenhow with paternal care watched over the interests of the Society as Treasurer; and has recently accepted the office of President, which as founder, was eminently due to him. The Council of the Society did me the honour to place my name among the Vice-Presidents; and at a later period I was elected one of the six Honorary Members of the Society. It is much to my regret that the state of my health and my engagements with another Society prevented my taking an active part in the meetings, but I can bear testimony to the interest and liveliness of the discussions. The annual volumes of Transactions have produced a large collection of remarkable cases, generally highly commendable for their conciseness

as well as their precision; and the occasional discussions on special subjects selected for the purpose, have introduced a novel mode of inspiring with interest doubtful and important questions.

In the year 1873 my good friend Thomas Blizard Curling (since President of the Royal College of Surgeons) called to announce to me that the Council of the Royal Medical and Chirurgical Society had nominated me for election as President for the ensuing year. He was the retiring president; and had long been on terms of intimacy through my having attended his invalid son; who, like my youngest son, had sought and found relief from an asthmatic affection in the Argentine States of South America. The proposal from the Medical and Chirurgical Society was quite unexpected, as I was late in entering the Society, and had hardly attained the seniority which has usually been considered a chief claim. The honour was therefore the more flattering, and I was the more grateful for it, as my intended retirement would have precluded my accepting it, had the offer come a year later. In accepting the office, in addition to my acknowledgment of the high honour conferred on me, I had to plead for indulgence in consideration of my advancing age, and especially of the infirmity which was too plainly increasing on me. However, with the able assistance of the excellent secretaries, Dr. Symes Thompson and Mr. Cooper Forster, I got through the duties without difficulty, except in losing the utterances of the most distant and least distinct speakers.

I had always great respect for the Medical and Chirurgical Society, viewing it as an outgrowth of the vitality of the science and art of medicine of a past age, springing from independent and individual effort, and owing nothing to authority or endowment. It endeavoured to do what the College of Physicians ought to have done, regularly publishing its Transactions—and accumulating its library—with Astley Cooper, Brodie, Travers, and other distinguished men among its most zealous members, until it grew into a very important and useful institution. One of its most active founders, Dr. Yellowly, originally a provincial physician, afterwards residing

in London, I met repeatedly at the earlier meetings of the British Association for the Advancement of Science; and young as I was he paid me the compliment of consulting me respecting his own health. Although thus contemporary with a founder of this Society, my usual associates were so much in the van of progress, that we already looked upon it as rather old-fashioned, and I did not join it until 1840, when its library became a necessity. This was too busy a time to permit me to take much part in the Society's proceedings, and I did not contribute to the Transactions. I sometimes joined in the debates, and was made Chairman of a Committee appointed by the Society to make Researches and report on Death by Drowning, and on the best mode of treating drowned persons. The results were interesting, and the report was considered practically valuable; but I have no documents by me to enable me to give an account of them.

Under my presidency the meetings of the Society went on much as usual. Attendance moderate. No lack of communications; and the discussions sober and sensible, if somewhat wanting in a spirit of enthusiasm. An effort was made to arouse the energies of the Fellows by repeating the Conversazione which had been held on a former year, and this came off successfully. Such social gatherings not only afford agreeable opportunities of reunion among town and country Fellows, and persons of eminence in science, art, and literature, but they bring under notice novelties and objects of interest connected with science and art. An endeavour was made on this occasion to exhibit specimens of the work of amateur artists in our own profession; and the number thus collected was very remarkable, and gave evidence of the highest artistic talent and technical skill.[1] The Society was under great obligation to the contributors to the exhibition, to the Secretaries and other Members of the Committee, and especially to the obliging and indefatigable

[1] My former pupil Mr. Seymour Haden and Mr. Propert, among the most distinguished cultivators of the art of etching, were exhibitors. There were eighteen pen-and-ink drawings on leaves from my case-books of 1836 and 1837, showing the cases which first established the diagnosis of valvular disease of the heart. Some were published in the *Med. Gazette* in March 1836, and are referred to in Chap. XVI.

Assistant Librarian, Mr. B. R. Wheatley,[1] who received a special vote of thanks on the occasion. To him, whom I called our *genius loci*, I found myself under continual obligations. His knowledge of the library—the great treasure of the Society—is invaluable.

I will conclude this notice with a few of the obituary records of deceased Fellows, and the closing remarks given in my presidential addresses at the Anniversary Meetings in March 1874, and 1875.

I was succeeded in the Chair by my distinguished and eloquent friend, Sir James Paget.

'*Baron Justus von Liebig*, F.R.S., Professor of Chemistry at Munich, Foreign Associate of the Academy of Sciences in Paris, &c. &c., was elected Foreign Honorary Fellow of this Society in 1843, being then in the zenith of his reputation as the greatest organic chemist of the age. In the year before, I was honoured by his presence at my opening lecture at University College, introduced by my colleague Professor Graham. Then, thirty years ago, I paid a public tribute to his merits; I now have to record his loss, with a bare mention of the inestimable obligations which his labours have conferred and are conferring on Chemistry and on Medicine.

'Liebig was born at Darmstadt in 1803. He studied at Bonn, Erlangen and Paris, and took the degree of M.D. at Erlangen at the early age of nineteen. At twenty-three he was Professor of Chemistry at Giessen; and in his laboratory established there, aided by a crowd of students attracted from all countries, he carried on many series of researches on the composition of organic bodies, not more remarkable for their number than for their ingenuity and accuracy. And in all this work he was likewise schooling successive troops of pupils in his methods and manipulations in analytic chemistry. To quote the words of a pupil, one of our own Fellows, Dr. George Harley: "During a quarter of a century, young scientific aspirants in chemistry, medicine, and physics, flocked to his laboratory from every quarter of the globe; and it is not very many years since it was almost impossible to name any university in Europe where one or more of his pupils were not to be found as teachers, propagating his views." "Brit. Med. Journal," April 26, 1873. In 1845 Liebig was made a

[1] As this is passing through the press I see the announcement of the death of this most useful and estimable man. He will be much missed.

Baron; and in 1852 he was invited to Munich to occupy the Chair of Chemistry, which he held to his death, April 19, 1873, when he had nearly completed his seventieth year.

'Whilst by general consent the analytic work of Liebig is admitted to be of the highest order, his theories and general views in chemistry and physiology, bold and attractive as they are, have been by no means so generally received. The principal objection to them, especially when they were first propounded, was that they were too exclusively chemical, and they too much disregarded the nervous and other influences peculiar to the living body. Perhaps I may be permitted to mention that I did not entertain this objection; for several years before either Liebig or Dumas had published on the subject, in my inaugural dissertation, printed in 1824, I had adduced both experiments and arguments to prove that, contrary to the opinions then generally held, oxygen is absorbed into the blood in respiration, and distributed through the circulation, and through its chemical action, is chiefly concerned in the removal of hydrocarbon from the blood, and in elaborating urea and other materials of the secretions; and that thereby, in all these processes, is produced animal heat—the καταμόρφωσις being also a process of ἠρεμάκαῦσις. It was therefore not a little gratifying to myself to find similar views afterwards advanced and extended by Dumas, Liebig, and other leading chemists of the day. Among these Liebig was the most daring and comprehensive in his theories, which he applied with the strong force of genius to all departments of organic chemistry, with full practical bearings on dietetics and agriculture. We have no time even to glance at the many important points in which the labours and reasonings of Liebig threw light on physiology and medicine; but his classification of alimentary substances, dividing them into heat-producing or combustive, and nutritive or blood-making, may be cited as a grand generalisation of the highest utility as a general guide, although subject to exceptions and modifications in its application to details. So likewise in the more practical instance of a special kind of food, the *essence of meat*, to which he has given the sanction of his name, although it has been found very useful in giving flavour and digestibility to other kinds of food, its nutritive power is proved to be very low, and not such as to do credit to its inventor. We would rather look back, beyond these recent commercial speculations, to the long catalogue of the past labours of this eminent man, which fully entitle him to the highest rank among organic chemists of the age.'

'The very day after the death of Liebig closed the life of one

of his most distinguished pupils, *Henry Bence Jones*, M.D., D.C.L., F.R.S., F.R.C.P., Consulting Physician to St. George's Hospital. He was elected Fellow of this Society in 1844.

'He was born December 31, 1813, at Thorington Hall, Suffolk, soon after the return of his father, Col. Jones, from the Peninsula. His education commenced at private schools, and was continued at Harrow and Cambridge. Although steady in his student's life, he seems to have distinguished himself more at cricket, foot-ball, and boating, than in learning; but he took delight in the study of Euclid. He took an ordinary degree in January, 1836, and after some hesitation in determining his line of life, between divinity, commerce, and emigration, he was influenced by Mr. George Babington, Surgeon to St. George's Hospital, to try the medical profession, commencing in a department that few would consider attractive, the Apothecaries' Dispensary of St. George's Hospital, where for seven hours daily he was occupied in compounding medicines for the patients. So, like Liebig, he began with pharmacy, and this probably developed the bias in his mind towards experimental chemistry which characterised his subsequent career. In the autumn of the same year he became a regular student at the Hospital; and it was in attendance in the medical wards there that I first became acquainted with him. He was remarkable for his hair being grey at that early age, and he was not less remarkable for an earnest abruptness of manner amounting to impetuosity. He frequently availed himself of my experience in auscultation, which at that time was undergoing an ordeal at St. George's Hospital, being openly ridiculed by one physician, and but imperfectly understood by others. But Bence Jones showed no great aptitude either at the bedside or at the post-mortem examinations; and it was only after the private instructions in the laboratory in 1839, under my then colleague Professor Graham and Mr. Fownes, that he gave evidence of so mastering his subject of study as to advance to original research, the first fruits of which were communicated to this Society in a paper on "Cystic Oxide Calculi," which was published in the 23rd volume of the "Transactions." It is a purely chemical paper, proving the presence of a large quantity of sulphur in cystine, which had been questioned by Dr. Prout. Several papers on the chemistry of the urine follow in subsequent volumes of the "Transactions," all bearing the stamp of profound knowledge of analytical chemistry; but it is only in the more recent ones that the physiological and pathological reasonings of the experienced physician become apparent; and it is not surprising that they are strongly tinctured with the views of the cele-

brated Professor of Giessen, for in 1841, before settling to practice in London, he had wisely availed himself of the teachings of this school so celebrated for animal chemistry.

'All Dr. Jones's papers give evidence of a vast amount of exact and patient work in the laboratory; and some supply interesting illustrations of Liebig's leading idea, in the share which oxygen has in sustaining animal functions, by combining with the combustible matter of the tissues.

'Thus in the 30th volume of our "Transactions" on a "Contrast between Delirium Tremens and Inflammation of the Brain," he proves that the former is attended with a diminution in the phosphates in the urine, whereas inflammation of the brain greatly increases them by the consumption of the phosphorised fat by the flow of arterial blood through the organs. So likewise the restless muscular movements in chorea and delirium tremens are attended by an increased appearance of sulphates, from the oxidation of the sulphur in the muscular tissues.

'Dr. Jones settled in London in 1843, and his chemical reputation soon brought him patients. The death of Dr. Prout and the illness of Dr. Bright about this time had made an opening in his line of practice, which he was not slack to fill, supported as he was by the recommendations of Sir Benjamin Brodie, and by a tide of fashion in favour of chemistry in medicine. Although still young, his grey hair and positive manner were not without their influence in gaining the confidence of patients; and after his appointment to St. George's Hospital in 1845, with opportunities of experience and research by which he fully profited, he rapidly rose into a large and lucrative practice of the highest class. But such a practice, in addition to hospital work, and lectures and various investigations continually going on in the laboratory, caused such a heavy strain on bodily and mental powers as none but those of the soundest and most robust constitutions can bear. It is not surprising, therefore, that Dr. Bence Jones, in the year 1861, began to suffer from palpitation of the heart; and by aid of a flexible stethoscope he found the signs of valvular disease, the foundation of which was in all probability laid by an attack of rheumatic fever from which he had suffered twenty-two years before.

'It is well known that the valvular lesions, to which I first applied the terms *obstructive* and *regurgitant*, are not uncommon sequels of acute rheumatism; but I doubt that the profession are fully aware of the fact that slight lesions of both kinds, with their characteristic signs, may exist for many years without causing any marked inconvenience; until in middle or advancing age, under

the strain of bodily exertion or mental anxiety, the wear and tear of life increases them, and adding other morbid conditions of the muscular tissue, of the great secreting organs and of the blood, the disease sooner or later tends to a mortal issue.

'Most wisely Dr. Jones resigned his office of physician to St. George's Hospital in the year following; but his ardour for science drew him into another field, which, if less laborious and more congenial, yet added to the responsibilities that were already telling on his frame. He undertook the office of Honorary Secretary to the Royal Institution; and whilst he agreeably thus became the intimate associate of Faraday, Tyndall, and other eminent professors of that nursery of practical science, the superintendence of its lectures and affairs devolved on him a laborious addition to his private practice and scientific work. It is not wonderful that in a few years his health again broke down: in 1866 we find him dangerously ill with hydrothorax; under skilful treatment, however, he again so far recovered that in 1867 he undertook the office of Senior Censor of the College of Physicians; and in 1868 he delivered the Croonian Lectures on "Matter and Force." In 1870 he received from Oxford the honorary degree of D.C.L. But his work was becoming yearly more limited by increasing infirmities; and the usual sequels of prolonged heart-disease—enlargement of the liver, ascites, and anasarca—supervening, he succumbed April 20, 1873.'

'*Sir Henry Holland*, Bart., M.D., D.C.L., LL.D., F.R.S., Physician to the Queen, President of the Royal Institution, died October 27, 1873, ætat 85. Elected Fellow in 1814, on the Council 1817, 1833, 1834, Vice-President 1826 and 1840: he declined nomination for the presidency.

'He was born October 27, 1788, at Knutsford, in Cheshire, where his father was in general practice. He was educated at private schools at Newcastle-on-Tyne and Bristol, and at the Universities of Glasgow and Edinburgh, at which last he took the degree of M.D. in 1811; having made the acquaintance of Brougham, Walter Scott, Dugald Stewart, Jeffrey, Sydney Smith, and other celebrities, which began that literary association which gave a character to his whole life. Directly after his graduation he joined a party going to Iceland, and thus commenced that series of travels which he continued every year during a period of more than sixty years.

'With a natural taste and capacity for literary pursuits, highly cultivated by education and by association with kindred spirits; in manners particularly courteous and engaging—almost fawning—he

soon gained access to the best London society, and in an unusually short time became established in a high grade of practice, which continued with little variation for fifty years, in the course of which he was brought into communication, and often intimacy, with almost every person of eminence, whether in rank, in literature, in science, or in art. Thus it is that his "Recollections of past Life," written only a year before his death, introduce personal reminiscences of almost every notability of the last half-century. This autobiography is so recent, and has been so generally read and quoted both in and out of the profession, that it is unnecessary to dwell on the details of the career of this celebrated man, of whom it may be said that, as a physician, his practice, distinguished as it was, was more aristocratic than extensive; that his path in literature lay more in *dilettanti* criticisms than in solid authorship, and that his contributions to medical and other sciences were more in speculative and suggestive essays than in careful observation or profound research. Variety and precocity of talent diligently cultivated, and an engaging demeanour, characterised more by the *suaviter in modo* than the *fortiter in re*, enabled Dr. Holland to make the best of his rare opportunities, and to rise rapidly to the highest rank in the profession without any of those hospital and professional labours which are the more usual and safer foundations and preliminaries to such success. But his case was quite exceptional, and by no means to be held up as an example to be followed; except perhaps in the wise resolve with which, resisting the temptation to become rapidly rich, he every year devoted two months to the recreation of foreign travel, whereby in all probability the activity of both mind and body was so wonderfully preserved to a ripe old age. But this practice, however salutary, was carried to an excess; the length and rapidity of his journeys which were his boast became his snare, and advanced as his age was, we can hardly doubt that it might have been further prolonged had not his enthusiasm carried him, within the last two months of his life, first to the north of Russia and then to the south of Italy. He died only two days after his return home from this last journey.'

'*Henry William Fuller*, M.D., F.R.C.P., Senior Physician to St. George's Hospital, died December 18, aged 53. He was elected Fellow in 1846, on the Council 1862, was secretary 1864-5, and Vice-President 1868-9.

'Born in 1820, son of Henry Peter Fuller, the well-known and highly esteemed General Practitioner in Piccadilly, long one of the Visiting Apothecaries of St. George's Hospital, and one of its greatest benefactors; Dr. Fuller was educated at Rugby under

Dr. Arnold; at the age of eighteen he was entered as student at St. George's Hospital, and at the same time commenced his studies at Cambridge, having obtained a Tancred Scholarship. In 1843 he took the degree of M.B., and four years after, at the early age of twenty-seven, through his father's powerful influence, he was elected Assistant Physician to St. George's Hospital. In 1851 he took his degree of M.D., and in the following year was made Fellow of the Royal College of Physicians. In 1857 he succeeded to the office of Physician to St. George's Hospital, which he held to the time of his death, having for some years been senior physician. In his hospital duties Dr. Fuller was most industrious and painstaking; and his skill in diagnosis and his confidence in the action of remedies rendered him a very popular clinical teacher. His communications to our Society, as well as his more numerous separate publications, are further proofs of his activity and intelligence as a practical physician, and were the means of introducing him into extensive private practice. His treatises on rheumatism and gout, and on diseases of the chest, are remarkable rather for the clearness and decision of their views than for their originality or depth. As good summaries of modern practice they have been so well received as to pass through several editions; and their lamented author was engaged in correcting proofs of a new edition of his work on rheumatism within a few days of his death. I take this opportunity to add my testimony in favour of the method of treating acute rheumatism recommended by Dr. Fuller, that by large and frequent doses of alkaline salts. The superior efficacy of this practice is statistically proved in a paper by Dr. Dickinson in vol. xlv. of our "Transactions;" and Dr. Garrod, in vol. xxxviii. had previously pointed out the advantages of this treatment, which was also a modification of what I had proved to be most successful in my hospital practice from 1840 to 1850.

'Dr. Fuller's death at the comparatively early age of 53, and its cause, cerebral pyæmia, apparently originating in an abscess in the posterior mediastinum after a few days' illness, gives us another example of the fatal consequences of overwork in our profession. Regular hospital duties, a large private practice, and continual authorship, besides numerous engagements in the insurance offices and societies with which he was connected, must have taxed his powers to the utmost for many years; yet we find him holding on with his characteristic confidence to the last; giving up nothing, not even allowing himself the usual autumnal holiday; it is not surprising that both flesh and blood should be in a catamorphotic state; and that a partial suppuration induced by cold should spread into the vessels of the overworked brain.'

'I cannot conclude this imperfect tribute to our departed colleagues without one practical reflection which may bring a word of warning to the more ardent and ambitious of their survivors. Of the eighteen whose lives I have sketched, not more than five have attained threescore years and ten, the natural age of man. At least an equal number have prematurely fallen, too plainly the victims of their overwork; this overwork being the consequence and concomitant of success, which excites to continued efforts in spite of warnings of failing health and strength. The temptations are great and call for unusual resolution and self-control to resist them. I, too, have had to go through this struggle, and cannot but think that the issue was a narrow escape worthy of mention. After ten years of honourable but very laborious toil in professional and hospital duties, I made the wise resolve to relinquish them in time, and to forego many public engagements, and was thus enabled to recover strength for twenty years more of private practice, and now have lived to receive the honour which you have conferred on me by placing me in this chair.' . . .

. . . (In reference to the competition of other societies.) 'If we show ourselves to be liberal and enlightened, not tied down by old rules and restrictions, but inspired with the spirit of progress, and willing and eager to advance and expand with the enlargement of our science and of our art, we need fear no rivalry from other societies. The field is wide enough for all. The population of London is nearly four times what it was when this Society was young and almost alone; and I suppose that the members of our profession have multiplied in like proportions. Still more, have not enterprise, and trade, and commerce, and wealth—have not knowledge and letters—expanded to enormous dimensions? And are our old societies and institutions to stand still and stiff in all this swelling tide of development and progress? If so, they must expect to be left aside and behind, and to see other societies spring up to direct the expanding streams of knowledge, over which by timely and liberal action they might have retained the dominion.

'Examples rise up in one's mind of what the Royal Society, the Royal College of Physicians, and other ancient institutions, might have been had they, by timely activity, and liberal policy, assumed, as they could have done, the functions of *National Directories* in their respective departments. But to keep to our own case. Time was when our Society, by lengthening its cords and strengthening its stakes, could have expanded itself so as to include the growing branches of medical knowledge within its own sphere of direction. The idea *was* started and the attempt *was* made, but it was opposed

and failed; the opportunity was lost! You know the sequel. These branches established themselves independently in distinct societies, and all subsequent attempts at amalgamation have failed.

'Still, not only are some of these societies our tenants, but are not many of their members our own flesh and blood? Surely, then, we may live with them on the most neighbourly and friendly terms, and, profiting by the example of their energy and activity, let us take our part in the onward march, and then with the prestige of our history, our "Transactions," and our library, comprehending the greatest names and the greatest works in our profession, we shall not fail to maintain our position in the foremost rank among the societies and institutions of our country.'

The obituary notices continue in the address of the following year, 1875.

'*Francis Edmund Anstie*, M.D.Lond., F.R.C.P., Physician to the Westminster Hospital, died September 12, 1874.

'He was born at Devizes, and after education at a private school, was articled to his cousin, a general practitioner in the same town. In 1853 he commenced his medical studies at King's College, London, with little remarkable in his career, unless in his enthusiastic devotion to the teaching of Dr. Todd, under whom he acted as clinical clerk, and had his attention specially called to the use of stimulants, and to the study of diseases of the nervous system. In 1858 he took the degree of M.D. in the University of London, and began to practise as a physician, first in Onslow Square, and after his marriage, in 1862, in Wimpole Street. He had already been connected with the Westminster Hospital, and in 1860 he was appointed Assistant-physician and Lecturer on Forensic Medicine. After contributing several essays on the action of alcohol on the system to different journals, in 1864 he published a work of considerable ability and research on stimulants and narcotics. He was also a large contributor to the pages of the "Lancet" and to "Reynolds' System of Medicine." In 1867, in conjunction with Dr. Lawson, he founded the "Practitioner," and in the following year became its sole editor. This monthly periodical soon became the favourite organ of the "young physic" of the age, being characterised by a bold spirit of innovation, with scanty respect for the experience and opinions of the past. Doubtless Dr. Anstie displayed great energy and skill in the management of his journal, but, as with other young journalists of the present day, his criticisms were sometimes in excess of his experience, for his hospital practice until the last year was limited

to the little-instructive class of out-patients, and his private practice was very scanty until after the publication of his work on neuralgia. He had himself been a sufferer from this malady, and this fact, together with the previous direction of his studies, gave him such a thorough knowledge of this subject that he soon became an authority and a centre of increasing experience. In like manner his articles in "Reynolds' System of Medicine" are very unequal in merit, those on alcoholism and neuralgia being just as truthful and masterly as that on pleurisy is deficient in accuracy and information.

'Dr. Anstie was so well known and generally esteemed as one of the most deserving and rising men in the profession, that it is not necessary for me to pronounce his eulogium, but the following extract from the "Lancet" comes with grace and authority from a journal with which he had long been connected.'

'"Dr. Anstie contributed occasional articles on scientific subjects to various non-medical papers, and was for years a member of the editorial staff of this journal. In that capacity he was the originator and the chief member of the 'Lancet' Commission to inquire into the state of workhouses, and not only laid down the general plan on which the proceedings of the Commission were to be carried on, but also took a principal part in conducting the inquiries and in writing the reports.

'"Dr. Anstie became a Fellow of the College of Physicians in 1865, and was soon recognised as a power in that venerable institution, where his voice was raised in support of every proposal which was calculated to increase the dignity or to extend the usefulness of the College. He was much interested in the recent improvements in the manner of electing the Fellows, as well as in the negotiations for the conjoint scheme of examination, and he was the prime mover of the petition to the Premier on the subject of the overcrowded dwellings of the poor. In two directions, therefore—in the reform of workhouses, and in the limitation of the powers of railways to sweep away needful habitations—his efforts led immediately to legislation for the public good."'

'The untimely death of this able physician just as he was attaining the prosperity due to his talents and devotion, has been felt as one of the saddest events of the past year; and the more deplorable as being an accidental result of neglect of hygienic rules, which are necessary for the safety of the profession as well as of the public.'

'*Sir James Ranald Martin*, C.B., F.R.S., F.R.C.S., Examining Medical Officer to the Secretary of State for India in Council,

Inspector General of Army Hospitals, Member of the Permanent Army Sanitary Commission, &c. &c., died November 27, aged 81.

'Born in the Isle of Skye, of old Highland parentage, he received his early education at Inverness, but his medical instruction was derived from St. George's Hospital and the schools of Wilson, Bell, and Brodie, in Windmill Street, London. An appointment in the service of the Hon. East India Company soon determined his sphere of action. In 1817, he arrived in Calcutta, and from that time until he finally quitted India, in 1840, he was constantly engaged in various departments, military and civil, and soon became highly distinguished by his zeal and ability, not only in the routine of practice, but also in his investigations into the causes and means of prevention of disease, and in devising sanitary regulations for barracks and hospitals. Like my lamented friend, Dr. McLennan, in the Bombay Presidency, so Martin was one of the earliest sanitary reformers in the Bengal province; and the variety and extent of the experience thus obtained qualified him to take a leading part in the Government Commission on the sanitary state of the army in India, subsequently originated by Sidney Herbert. After having taken part in several campaigns in Orissa and Burmah, and suffering severely from jungle fever, in 1826 he settled in Calcutta, and soon had a large private practice. In 1828 he was appointed surgeon to the Presidency and to the Native Hospital of Calcutta. He thus gained a large experience in the diseases of India; and when the failure of his health compelled him to quit that country in 1840, he brought with him to London the reputation of being the highest authority on Oriental maladies. This was further confirmed by his joining Dr. James Johnson in producing a new edition of the well-known work on "The Influence of Tropical Climates on European Constitutions," in 1841; and in subsequent editions in 1855 and 1861 it was issued in his own name. Although in considerable consulting practice during his residence of thirty-four years in London, it appears from several notices of Sir Ranald Martin's life from the pens of well-informed friends, that a large portion of his time was taken up by public and unremunerative work. Thus in the "British Medical Journal:"—

'"He took an active part in forwarding the great sanitary movement in this country. He gave his time and his energies, and his great business powers, ungrudgingly to the public in this service; spending days, and weeks, and months, sitting on Boards and Royal Commissions; inquiring into and reporting on questions of public health affecting the community, and the British and

Indian armies; giving up time that might have been devoted to adding to his fortune and making provision for his large family."'

'Although Sir Ranald Martin's numerous and eminent services were acknowledged by honorary distinctions, there was little substantial return for the devotion of nearly sixty years of his life to incessant and anxious toil, with great and frequent danger and injury to his health. Merchants, planters, and civil officers of high rank return from India with large fortunes after much less labour and much shorter terms, but this most distinguished military medical officer, when compelled by ill-health to return after twenty-three years of active service, finds himself obliged to resume practice for thirty-four years more; he returns, not to *otium*, but to *labor cum dignitate*, including a gratuitous work of sanitary reform, begun in India, and carried out by himself and others in England, the result of which has been to preserve thousands of lives, and to save millions of money.

'The profession owe much to Sir R. Martin for his spirited advocacy of its claims to consideration and distinction, especially on two important occasions. When he was made member of the Health of Towns Commission in 1842, whose report led to the appointment of district officers of health, it was through his influence that medical men were appointed to these offices, instead of attorneys, as had been first proposed. Again, in 1849, he published his "Summary of the Claims of the Medical Officers of the Army and Navy to Military Rewards and Distinctions;" and by his having afterwards induced his friends, Sir Howard Douglas and Sir De Lacy Evans, to bring the subject before the House of Commons, he was mainly instrumental in causing the honours of the Bath to be extended to distinguished medical officers, to whom they had hitherto been refused. These signal services, and his achievements, early and late, as a pioneer and promoter of sanitary reform, have won for the name of Ranald Martin a foremost place in our ranks, whilst his gentlemanly and genial nature endeared him to a large circle of friends.

'Thus, during the past year we have lost from our ranks two men who have signally reflected honour on their profession by their noble and unselfish exertions in the cause of humanity. Nor are their histories singular. Nay, do they not rather represent the general character of the lives of medical men, who, in their respective spheres, find themselves called on—and do not refuse—to toil night and day, often sacrificing their health and sometimes their lives, for the relief of suffering, without, or with very inadequate,

remuneration? Doubtless it is a noble and a godlike work, and assuredly they have their reward; but this comes not from the gratitude of the public, nor from the appreciation of their services by the upper ranks of society. Because, unfortunately, the numbers and the needs of medical men are commonly so great that some are ready to proffer their services at any or at no price, the public seem to expect from them gratuitous work, which would not be thought of from any other profession or trade. Against such injustice we cannot too strongly or persistently protest.

'A recent communication from our Council to the Society gives me occasion to notice what must be considered another indignity offered to our profession. The Secretary of the Royal Society for the Prevention of Cruelty to Animals has addressed to our Secretary a letter asking permission to be present with two other gentlemen when any operations on living animals are appointed to be performed. You know that the reply of the Council was explicit, that "if the Society should undertake any scientific investigations rendering such processes necessary, *they would certainly decline the presence or interference of any unqualified witnesses.*"

'In justification of this decision it would not be difficult to prove that only those profoundly acquainted with physiology can be competent judges of the necessity of making experiments on animals and of the most merciful mode of conducting them, and that the humanity of such experts—being also practitioners of the healing art, the great aim and constant object of which is the relief of pain and the mitigation of suffering—the humanity of such, I say, may be implicitly trusted, without being subjected to the *espionage* and *surveillance* of impulsive and unqualified observers. In justification of the practice of vivisection for scientific and humane purposes, it has been fairly argued that if whole hecatombs of animals are habitually and ruthlessly sacrificed, not only for food, but for luxury, and for sport, and often with little or no consideration for their individual tortures, there is a much more rational and cogent plea for the use of a few in scientific investigations which have intimate bearings on the relief of suffering humanity. But I would claim a warrant on still higher grounds by reminding you that, long before the Divine permission to use animals for food (which was after the flood[1]),—to man was given "*dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.*"[2] What is this "dominion" but the subserviency of all animals to man's use for all proper purposes and for all time? And as the immediately preceding mandate—to subdue the earth—

[1] Gen. ix. 3. [2] Gen. i. 26, 28.

("replenish the earth and *subdue* it") has had its continual fulfilment through the development of physical science and art in all ages, down to their last great achievements in making servants of the great powers of the earth, heat, light, and electricity, in the steam engine and the electric telegraph and light—so does the primæval command to have dominion over animals, coupled with the Christian injunction, "Heal the sick," show that we are not merely permitted, but absolutely enjoined, to make such use of animals as science points out for the advancement of the healing art. And to whom can this "dominion" be so safely and beneficially confided as to the members of that profession of whom our late Fellows, Ranald Martin and Francis Anstie, were types?—the one having devoted the greater part of a long life to work for the public good, the other cut off in his prime in full career of usefulness, a sacrifice to his beneficent labours!

'In conclusion, I must express my great obligations to the members of the Council and to the Honorary Secretaries for the friendly advice and assistance which they have given me in the performance of my duties, and to you, gentlemen, for the kindly manner in which you have supported me in this chair—above all, for the high honour you conferred on me by making me your President—an honour which I prize above all others in my professional career. I thank you from my heart, and I sincerely wish you, socially and individually, all prosperity and happiness.

CHAPTER XLII.

CONSTRUCTION OF EAR-TRUMPETS. ACOUSTICS OF ROYAL ALBERT HALL. VISIT TO IRELAND. APPOINTMENT TO THE QUEEN. BRITISH ASSOCIATION AT BELFAST. 1874.

Ear-trumpets—Principles of Construction—Materials—Two kinds required—Conversation tubes—Ear-trumpets for distance—Pasteboard and Paper—Other aids to hearing. Acoustics in Royal Albert Hall. Noble and eminent Connections. Visit to Meeting of British Association at Belfast. News *en route* of being appointed Extraordinary Physician to the Queen—Unexpected. Exhibition of Seaweed at Meeting at Belfast. Comments on Meeting. Sir W. Wilde on Ancient Irish. Excursion to Donegal and Connemara. Irish cure for Abscess of Jaw. Croagh Patrick. No fish at Westport—Yet abundance ready for the taking. Bog—the growing devastation of Ireland—Calls for a national remedy. Dr. Hudson in Connemara. Sir W. Wilde on Lough Corrib—The last of him and Dr. Stokes.

The termination of my presidency of the Medical and Chirurgical Society took place in the spring of 1875: but a few events deserving mention had occurred previously. Early in the session of 1873-4 I made a communication to that Society 'On the Acoustic principles and construction of Stethoscopes and Ear-trumpets.' So far as regards stethoscopes I have already made some remarks in the note on page 49 of the present volume, and refer the reader to them, and to the original paper in the 57th volume of the Medico-Chirurgical Transactions.

But the continuance of my infirmity of deafness has given me the opportunity of further experience with respect to ear-trumpets, the results of which may well be introduced here.

The acoustic principle of the ear-trumpet is quite different from that of the stethoscope. Instead of being both a solid conductor and a closed tube of air, as the stethoscope, it is an aerial reflector and an open tube, to catch the waves of sound

in the open air, and to concentrate them with increased force into the ear. Sounds are ordinarily conveyed to the ear through the air, and as this is both slower and weaker as a conductor of sound than solids, we have but few means of intensifying its sounds, and the chief of these is by reflection and concentration. Aerial sounds are however also caught by light rigid expanded solids, prone to vibration, as sounding boards of musical instruments, the membrane of drums, and the fan of the audiphone.

The best materials for reflecting aerial sounds are those solids which most differ from air in hardness and density, such as metals, glass, porcelain, &c.; but the weight of some of these, the fragility of others, and the intrinsic tinkling note of all, form objections to their use as ear-trumpets. Still the best instruments in common use are made of silver, plated metal, or japanned iron. The lightness of aluminium might claim for it a preference. Ebonite, which I formerly recommended, on further experience I find inferior; and its fragility proves a further objection. Thin papier maché, as made so cheaply and perfectly in Japan, would probably supply the best material; and I strongly recommend instrument-makers to endeavour to get the forms of ear-trumpet here described, manufactured in Japan. The ingenuity and enterprise of Japanese artisans would soon be shown in a way unequalled in any English fabrics. Since my retirement I have not been in the way of getting this accomplished. In the meantime the best substitute I have met with is thin pasteboard, or cardboard, as thin as possible consistently with sufficient rigidity to preserve its proper shape in the conical or tubular form now to be described.

Deaf persons commonly require two kinds of ear-trumpet. One for *tête-à-tête* conversational use, in which the speaker talks into or close to one end of the tube, the other end being applied to the ear of the hearer. This is the simplest kind, requiring no strict conditions as to either material or shape. A tube only is necessary, one end of which is introduced in the ear; and it may be flexible or rigid, tortuous or straight, without making much difference in its power of distinctly transmitting the voice sounds. For many years a pasteboard

ear-trumpet of this kind has been sold by Creswick, Stationer, 12 Great Portland Street, London. For convenience in portability and use, it is made in several pieces, to slide into each other so as to lengthen or shorten, like a telescope. It is rather roughly constructed, and costs only a few shillings, but it is the best conversational ear-tube for a deaf person that I ever met with. I use it habitually, and prefer it to every other kind. The sound of the voice is intensified by the length of the tube, for it is louder than when spoken closely into the unaided ear; and what is most important, the articulation is distinct, and wholly free from the confusing din or roar caused by most ear-trumpets and tubes, to which I shall presently allude. The mouth end may be expanded a little to facilitate the reception of the words; but this is not essential, provided that care be taken to speak *into*, and not *beside*, the orifice of the tube. But the use of this ear-tube is limited to conversation at close quarters; it avails nothing for distant sounds: therefore for hearing at the distance of a yard and upwards, and still more at church, or in other public assemblies, another kind is wanted.

We come then to consider the *form* of ear-trumpet that enables a deaf person to hear more or less remote sounds. The simplest and most efficient reflector of sound is a hollow cone with a wide base, open to receive as large a body of sound as possible, to be reflected *directly* to the apex, and conveyed by a short curved tube into the ear. All repeated or secondary reflections of sound, such as those in parabolic or circular cavities, are to be avoided; because, being retarded, they confuse the sound by an echo following, instead of coinciding with it. Such instruments may increase the noise, but they impair the clearness of articulate sounds, which hearing-trumpets ought to convey to the ear pure, and unmixed with echoes or reverberations.

Now, in point of fact, these confusing sounds *are* heard, more or less, in all ear-trumpets, as commonly constructed. They all have the *conch-like roar*, resembling that of the sea heard in large shells, which confounds the distinctness of words or other definite sounds. This noise is a reverberating echo of any adventitious sounds from without, and takes its

tone from the note proper to the size of the cavity or tube. Every tube has its proper note, resulting from the longitudinal vibrations of its column of air from end to end; and every cavity has its note, produced by repeated reflections across its diameter; and these notes respond to every noise or impulse communicated to the tube or cavity. Moreover, these noises not only confuse the original sound, but are often painful to the ear, which may be sensitive in feeling, although its hearing is impaired. It was therefore important to get rid of them; and I devised various means by which this could be accomplished in the conical tube which I chose for my ear-trumpet. Without dwelling on some of inferior efficacy, I will merely state those which I found most effectual. One was to have the cone large, subtending an angle of from twenty to twenty-five degrees. When narrower, the cone takes in less sound, and has more internal reverberations. Even in wide cones much noise remains. I got rid of this by these two expedients:—1. By using a less perfect reflector, such as cartridge paper or thin pasteboard for the expansion of the cone at its broad end. 2. By opening one side of the cone by oblique truncation, and prolonging the slit to within a few inches of the ear end. No sooner had I thus obliquely opened the cone almost from end to end, than I was struck at once by the resemblance that it bore to the ear of the ass, the hare, and other quadrupeds, and I was not a little pleased at this unexpected confirmation of the conclusion to which I had been led. I think that there can be little doubt that this form of external ear is wisely designed to aid the hearing of these animals in the simplest and most efficient way, by directing and concentrating sounds, without the confusing reverberation produced in complete tubes and hollows. It is not improbable, too, that the hairs which fringe the margins of the ears in these animals, may serve a like purpose, by muffling stray and superfluous sounds.

I made some attempts to estimate the magnifying power of my instruments; but it was difficult to make accurate observations in a city where disturbing noises are rarely absent. Taking as a test sound the ticking of a small mantelpiece clock, by the aid of these tubes I heard it from ten to a

hundred times the distance at which it could be heard with the unaided ear. A large cone of stiff cartridge-paper twenty-two inches long and ten inches broad at its base, made the ticking audible at a hundred-fold the distance at which the unassisted ear could hear it; but this was made for experimental purposes only, and too large for common use.[1] Smaller cones, fit for use, rendered the ticking audible at from ten to thirty times the unaided hearing distance.

During the last summer (1883) I gave as a model to Messrs. Creswick and Co., 12 Great Portland Street, an old ear-trumpet of the best form that I made myself some twenty or thirty years ago, being an obliquely open cone of thin pasteboard as described above, with a short curved ear-piece of tinned iron covered with indiarubber tubing. From this pattern they have succeeded in making very good instruments, which magnify distant sounds without any roar; and in several instances have enabled deaf persons to hear at church quite distinctly. They answered with myself for some time; but now my infirmity has increased beyond their power of relief.

The superiority of these pasteboard cones over those of metal, lies in their conveying the sound vibrations through their light material by conduction as well as by reflection, and in their being more free from the echoes and ringing sounds developed by metals. The same property is possessed by the fan or lamina of the *audiphone*. The utility of this instrument seems to me to be limited to those cases of deafness in which the cause lies chiefly in the outer ear, still leaving a way for the passage of sound by the teeth to the inner organ of hearing.

In the case of all aids to hearing now noticed, the use of the external ear, or pinna, is superseded by the small tube of the ear-trumpet being inserted into the auditory passage. But we ought not altogether disregard the aid to our hearing which nature has provided in our outer ears, although less bountifully to man than to many of the lower animals. Judging from my own experience and that of others whose hearing is

[1] I exhibited this and other forms of ear-trumpets at the Conversazioni of the Royal Society and Royal College of Physicians, and made demonstrations of their capabilities.

impaired, I think that much help might be obtained from the use of a sound collector behind the ear, and directing it forward towards the sound, as we instinctively do with the hand, and as we see many quadrupeds point their ears with good effect. A light cowl of indiarubber or gutta percha, of semi-parabolic form, with a rounded notch to fit behind the ear, and with a free margin projecting three or four inches in a parabolic curve beyond the pinna, would probably prove a considerable aid to the hearing; but the ear, although directed forwards, must be freely open in front. I commend these suggestions to ingenious instrument-makers.

In testimony of respect to the memory of the lamented Prince Consort, and at the same time as an indulgence in the luxury of good music, I became a subscriber to the Royal Albert Hall, and held seats in the front circle during the remainder of my residence in London. On the occasion of its opening (May 1871) I wrote a letter to the Times, inserted below,[1] complimenting General Scott, the designer of that

[1] THE ALBERT HALL.

(*To the Editor of the Times.*)

May 4, 1871.

Sir,—While we have reason to congratulate Colonel Scott on the comparative acoustic success of the Albert Hall, I think that this success may be further increased by more attention to the acoustic principles of its construction. In his letter Colonel Scott does not appear to me to describe correctly the sound-board action in musical instruments, or its application in the wooden wainscoting of the Hall. He says:—

'It is a matter of common observation that musical sounds often set up a vibration in the sounding-board of a piano, glass drinking-vessels, and similar resonant objects, and manifestly an interval must elapse between the actuating sound and the sympathetic response.'

But the vibration thus set up is that, not of the sounding-board, but of the wires of the piano, or of the glass of the vessels, which happen to be in unison or in harmony with the original musical sound, and yield their own corresponding tones. The sounding-board receives and diffuses this sound by its large vibrating surface; but, unlike the wires or the glass, it has no note of its own. It merely communicates to the air the vibrations which it receives from the wire or string, and thus increases the volume of sound (vibrating air) which reaches the ear. Sounding-boards are chiefly useful where the vibrating body producing sound is a solid, as in the case of wired or stringed instruments, and tuning-forks; and they owe their efficiency to the rigidity of their wood fibre, by which they promptly receive and transmit the vibrations, and to the light-

building, on its acoustic success, which I considered to be due to the liberal use of wood in the walls and galleries, which, instead of reflecting sound, and so causing confusing and disagreeable echoes, or after-repetitions of the primary vibrations, take up the note and reciprocate it in the manner of a sounding-board. But there were portions of the circular wall of the upper gallery not thus covered, and these caused a disturbing echo, marring the music at certain opposite points. I suggested a remedy, by either drapery or wooden wainscoting partially covering these naked walls and so either muffling or retaining the vibrations. From a communication which I afterwards had with General Scott, it appeared that he had not quite comprehended the explanation which I had offered, and that the success had been rather accidental than from design.

ness of their mass, which renders their vibrations more excursive and more able to impress the air in contact with their large surfaces. The sounds of wind instruments and the voice are not equally increased by sounding-boards, and the same may be said of other sounds communicated through air. But although we cannot greatly augment aerial sounds on this sounding-board principle, we can do something in this way; and I believe that something to have been successfully gained by Colonel Scott in his preferring thin wood to other materials for the lining of the Albert Hall.

If the walls had been faced with a hard, smooth, dense material, such as stone, tile, or plaster, they would have so perfectly reflected the sound as to produce distinct echoes, which, retarded by distance and repeated so long after the original sound, would confuse the words of speakers; and musical notes out of time, and therefore out of tune would follow. Confusion and discord would have been the necessary results.

If the walls had been completely covered with a soft, flaccid material, like drapery, which damps or deadens sound by completely neutralising the vibrations, there would be neither echo nor resonance; but although loud notes might have been distinct enough, all weaker sounds would be as much lost as if they were made in the open air.

A lining of thin, light wood will neither reflect the sound nor damp it, but will, in a measure, receive and participate in its vibrations, and thus increase the body of sound in its vicinity, without any sufficient retardation to injure time or tune. The general result will be to make the whole air of the amphitheatre, with its resounding wooden walls, vibrate in harmony or system with the leading notes of the orchestra, without any stray notes or echoes to cause confusion.

If it should be found on further trial that any such echoes still remain, no doubt they may be silenced by a judicious distribution of drapery; but I would suggest that the same correction might be obtained, with less sacrifice of sound, by frames or diaphragms of light ornamental woodwork on the echoing surfaces.

I am, Sir, yours faithfully,

CHARLES J. B. WILLIAMS, M.D., F.R.S.

According to my observations, architects are just as negligent of the study of the laws of sound in providing for the acoustic capacities of their buildings, as they are of the fundamental principles of lighting and ventilating them. What is more common than to find churches, and lecture and concert halls, marred for their most important objects by the noisy echoes that resound from every side within their walls?

The seat in the Albert Hall adjoining to mine was that of the Marquis and Marchioness of Ripon, who had been my friends after my long attendance on his father and mother, the late Earl and the Countess of Ripon, from all of whom I had received warm assurances of satisfaction and regard. In reminiscence of similar sentiments (rather than that they have any connection with my context, and I may not have another opportunity of recording them), I would mention in addition to several already spoken of, the names of other noble and distinguished individuals who have honoured me with their confidence and with satisfying acknowledgments of my consequent services:—Lord and Lady Wolverton, Earl and Countess Cairns, Earl Spencer, Lord Kilmaine, Lord and Lady Beaumont, the family of the late Earl of Clarendon, Earl and late Countess Granville, Lord Monson, Earl of Stradbroke, Earl of Ilchester, Earl Bathurst, Viscount and Lady Maynard, Earl of Suffolk, Earl of Stamford and Warrington, Viscount Strangford, Lord Thomas and Lady Sophia Cecil, Dowager Marchioness of Exeter, Viscount Sandon, Earl Fortescue, Dowager Viscountess Galway, Countess Howth, Archbishop Sumner, Sir Thomas Gladstone, H.R.H. Princess Frederick of the Netherlands, H.I.H. Duke de Leutchenberg, Prince de Messina, Prince Louis Lucien Bonaparte, and others which escape my recollection.

In the autumn of 1874, knowing that this was to be my last season, I determined to attend the meeting of the British Association for the Advancement of Science which was to be held at Belfast, and this would give me the opportunity of visiting the North and West of Ireland, which I had not seen.

Accompanied by my youngest daughter, we started in the middle of August. Halting one night in Chester and another in Dublin, I did not get letters till arriving at Belfast. In the train between Dublin and Belfast, which bore also Professor

Tyndall and other members of the Association, taking up an Irish paper, I read an announcement to this effect:—'Dr. C. J. B. Williams has been appointed Physician Extraordinary to the Queen.'

This honour was quite unexpected. Not only had I never sought for any such distinction, but I had never even been presented at Court, and may have been considered wanting in the loyal courtesy due to Her Majesty from one so much favoured by the public. But liberal though I was, and especially opposed to pretentious tyrannies of every kind, I would yield to no man in loyalty and devotion to a sovereign who with the beloved and lamented Prince Consort possessed the affections and the confidence of the whole people.

But I was somewhat shy and averse to the forms and ceremonies of Court life, and thought that my more serious occupations would plead a sufficient excuse for remaining in private. However, through kind advice, Her Majesty found me out and graciously bestowed on me an unsought honour, for which I was grateful.

On arriving at Belfast I found the official letter from the Lord Chamberlain announcing my appointment, which I acknowledged in dutiful and grateful terms.

I had no communication of my own to make to the meeting of the Association; but I was anxious to show in the natural history section a fine collection of seaweeds from Jersey, which had been beautifully preserved and displayed by an old patient and friend of mine, Miss E. Dyke Poore of 31 Roseville Street, Jersey; a lady confined to a couch by paralysis of her lower limbs, but who had acquired such skill and dexterity in the preparation and preservation of the marvellous colours and diversified structures of these algæ as to command the admiration of all. The president, Sir Joseph Hooker, P.R.S., expressed the thanks of the section to Miss Poore for her successful work in this department of botany.

Many years had elapsed since I had been at a meeting of the Association; and this visit was saddened by missing so many old friends who used to be the leading spirits—Buckland, Sedgwick, Whewell, Murchison, Taylor, Graham, all gone; and now followed by Phillips, the very life and mainspring of the

Association. The following remarks are extracted from a letter which I addressed to the Lancet on the subject of this visit:—

'In the establishment of the practice of giving addresses, both general and sectional, I think a move has been made in the right direction, and several delivered on this occasion were either valuable summaries of the present state of their respective branches of science, or presented important contributions of new facts. Dr. Tyndall's Presidential address, although received with much *éclat*, can hardly be placed in either of these categories. Publicly applauded, it was privately discussed with unmerciful criticism. In my opinion he had wandered out of his element and out of his depth, into the ideal and fantastic regions of ancient philosophy, *so-called*, in which men, instead of studying and so interpreting Nature through facts, sought in their own minds systems spun from the cobwebs of their fancy, to account for the phenomena of mind and matter.

'Even Professor Huxley seemed to be partially led away by a similar passion for speculation, when in his most interesting and masterly exposition of "*The nature of automatic movements of animals*," he delights to expatiate on the happy conjectures of Descartes, and does not even mention Marshall Hall, who by positive experiment first established the reality of those reflex actions on which automatism depends. When speculation is thus exalted above experiment, it is not surprising that many should raise an alarm against "logical consequences and dangerous tendencies," and an outcry is set up against materialistic science. For my own part, I see so little resemblance between the atomic doctrines of the present day and the fanciful molecules and atoms of Democritus and Lucretius, that they carry no conclusions in common. Religion and science are wholly distinct; the one being founded on faith in divine revelation, the other on human observation and reason.

'The addresses of Professor Redfern in the department of Anatomy and Physiology, and that of Dr. Hooker in that of Zoology and Botany, were both admirable, and strictly within the limits, and marking the progress, of their respective sciences. Professor Redfern adverted to the advances made during the last thirty years in our knowledge of the nature of textural nutrition. The cell-theory of Schwann and Schleiden transferred the process from the body, as a whole, to its constituent molecules; whilst more recent researches, although substantiating the principle of molecular life and proliferation, traced it to a protoplasmic matter independent of cells, these being frequent, but not essential parts in the process.

This change of opinion is the more interesting to myself, because as long as thirty years ago, in observations on the white blood-corpuscles as representatives of the plasma, I first described them as little lumps of jelly, adhering to the walls of the blood-vessels, within and without, and not possessing essentially a cellular structure. Shortly afterwards Dr. W. Addison made the remarkable discovery that these corpuscles pass bodily through the walls of the vessels—a fact which, although reaffirmed by Dr. Waller, was not generally received until rediscovered by Professor Cohnheim within the last seven years. Subsequently, the wonderful amœboid and migratory properties of these corpuscles have been more fully made out. And here I would emphatically point out that it is not pus-cells, or white cells, or cells at all, that have this vital power of migration, but morsels of protoplasmic jelly, and these only when alive; for, as proved by Graham, and noticed in Professor Redfern's address, dead colloids, even in solution, will not pass through membranes, where crystalloids pass freely. Professor Redfern did not refer to the application of these fundamental doctrines to pathology, which I have endeavoured to open up, and which promises a rich field for future investigators. He adverted to several recent researches proving the passage of nerve-fibrils beyond basement membrane, so as to come in actual contact with objects of taste and smell; and, according to Pflüger, the same occurs in the secreting epithelium of the salivary gland. Altogether, the last fifty years have been remarkable for the great advances made in physiology, chiefly through aids afforded by physical science.

'The address of Dr. Hooker, although on a limited subject, 'The Carnivorous Habits of certain Plants,' was replete with most curious and interesting facts, which establish clearly that certain genera, including dionæa, drosera, sarracenia, darlingtonia, and nepenthe, are distinctly and designedly carnivorous. They present various modifications of structure, comprising honey glands to attract insects, and either contractile leaves to close on them, or a narrow-mouthed cup or pitcher beset with reversed hairs to prevent their escape; an acid fluid by which they are digested, and an absorbent apparatus by which they are appropriated to the nourishment of the plant. I am sure that many will agree with Dr. Hooker in his concluding remark, that these evidences of intelligent design of correlation of organs and functions between the several kingdoms of nature, transcend in wonder and interest those of evolution and origin of species.

'Equally marvellous and suggestive of infinite wisdom in design were the interesting observations of Sir John Lubbock, proving the

dependence and mutual adaptations of structure between flowers and insects; and this not merely for the simple purposes of fertilisation, direct and cross, but also for the improvement of the species on the principle of selection; the brightest colours, the strongest scents, and the sweetest honey, attracting most certainly and freely the visits of insects, and thus making most sure the fecundity of the best individuals. All this was most interesting and instructive, and one cannot help remarking how it enlarges the theme of Watts's hymn, quoted by Dr. Hooker in moving the vote of thanks to Sir J. Lubbock, "How doth the little busy bee," &c.'

Nothing at the meeting interested us more than a lecture by my old friend, Sir William Wilde, on the ancient Irish races, whose early history he succeeded in illustrating by reference to numerous relics and ruins scattered through the West of Ireland, described in his interesting book on Lough Corrib. The aborigines, the Fomorians, of a prehistoric period, were supplanted by the Firbolgs, of Belgic origin, a small and swarthy race, who in their turn had to struggle with the Teutons, or Scandinavian Danaans, a large, fair or sandy-haired people of superior knowledge and intelligence. Traces of each of these tribes are to be found, not only in the mounds and antiquities of the country, but also in the complexion and characters of the inhabitants of different parts.

After the meeting we made an excursion to Donegal and Connemara; and should much more have enjoyed the wild varieties of scenery, but that I was tormented by a painful abscess in the jaw which almost closed my mouth and half starved me for several days, while jerked about in the open cars of the country. Arriving much exhausted at Westport, I found my friend Dr. Pye Smith there, also coming from the meeting of the Association, and he prescribed a remedy which gave me complete relief. This was a large tumbler of hot and not weak Irish whisky and water. This gave me a sounder sleep than I had enjoyed for many days, brought the abscess to an end, and two days after I made the ascent of Croagh Patrick, from the top of which the saint is said to have taken his flight, after having 'guv the bugs and toads a twist and banish'd all the varmint.'

We were glad of rest in the hotel, which was comfortable

and decent; but one thing struck me as extraordinary, that during the week of our stay we never had the offer of a taste of fish; yet Westport is on a creek of the sea, and from Croagh Patrick I could see the capes and sinuosities of the shore, with Achill Island beyond, offering such facilities for fishing, and, as I learnt, abundance of fish in the sea,—as to suggest an unlimited supply of food and profitable traffic;—yet there were numbers of miserable peasants, half starving on potatoes and buttermilk! We halted a few days at Leenane, a Protestant station in another creek to the south. Here we were well supplied with salmon—not from fishermen, but from the amateur anglers who resort there for the purpose; but we had evidence of the richness of the waters, in a *gigantic crab*, which by some chance was caught, and supplied enough for a dozen public car passengers who stopped to lunch! The only sign of industry in this branch that I witnessed was in several carts conveying sacks of *periwinkles*; collected by children among the rocks; these, I was told, were going to London. One would think this might suggest how much more could be done in the fishing way, with a little more enterprise and industry, among this wretched people.

In each of my four or five visits to Ireland I have also been struck with the prodigious prevalence of *bog* throughout the country; and in the cursory manner in which I have passed through, this prevalence seemed to be on the increase. In the Shannon and its series of loughs, I believe this is admitted to be the case; and unless some gigantic measures be taken to prevent it, the whole will be ere long choked by the invasion of bog-growth. Such measures could be accomplished only by national enterprise; and as a means of redeeming the country from extensive destruction, and of vastly increasing its productiveness, and of employing and interesting its idle and disaffected population, such a national undertaking does seem worthy of consideration. But my knowledge of the whole matter is quite superficial; and not such as to warrant my dwelling any longer on the subject. Land reclaimed from bogs seems to be very fertile. I was much struck with the luxuriant growth of some flowers and shrubs I met with in the vicinity of bogs. The fuchsia grows in large bushes

covered with gorgeous flowers; and the blossoming of some heaths is quite brilliant.

We visited Dr. Hudson in his cottage on a wild moor bordering on the Atlantic in Connemara; and enjoyed a day's hospitality at Sir William Wilde's villa on the banks of Lough Corrib. Although retaining all the geniality, and much of the vivacity of his former self, I grieved to see that he was wearing away; in a few months he terminated a life of great activity and usefulness, adorned with many brilliant and amiable qualities. Dr. Stokes also I saw for the last time in passing through Dublin, where I first had made his acquaintance nearly forty years before.

CHAPTER XLIII.

ROYAL SOCIETY—PROTEST AGAINST RECENT LIMITATION OF ELECTION OF FELLOWS. 1874–1875.

No opportunity of taking part in Society's affairs except in evening meetings. Scanty attendance. Complaints within and without—mainly due to recent restrictions on election of Fellows—Author's address on the subject at anniversary meeting. Limitation of members injudicious and unjust—unwarranted by original intention or constitution of Society, a voluntary unlimited association—Totally unlike French Institute, which is a Government establishment—Evil results of restriction—Recommendation of return to liberal principles and objects of Society. Appendix on legal status of the Society—Its name and objects—Table showing progressive diminution of Fellows. Committee appointed to consider subject—Report of Committee, reaffirming the limitation, with comments. *Status of Society and value of its Fellowship* stated by the Committee as the first consideration—not the *great purpose of the Society and the efficiency of its work*—and that 'other societies having arisen, devoted to one or other of the sciences, a new distinction of the Royal Society should be that of representing or actively and successfully working in the different departments of science'—not encouraging to simple improvers of natural knowledge, however genuine and meritorious. President's Anniversary address, 1876. Author's reply.

In Chapter XIV., on the occasion of my election as Fellow of the Royal Society in 1835, I mention the history and management of that body as subjects which would again occupy our attention. Except on a few occasions, when my health would permit, joining in the discussions at the evening meetings,[1]

[1] In one of these I ventured to differ from Professor Tyndall on a point in acoustics, connected with his experiments on Fog-signals at sea on behalf of the Trinity House. He found that certain states of the air which are optically clear, are acoustically opaque, and the converse; that is, that sound will not pass straight through air in certain states, although there is no visible obstacle, but is diverted in another direction. This he ascribes to *reflection* by the impervious, or acoustically opaque, portion of air, and causes what he calls an aerial echo. I object that for *reflection* of sound (as of light) there must be a *sudden* change of density in the medium, to form a reflecting surface, which could not take place in air, in which such variations could be only gradual.

I had no opportunity of taking any part in the affairs of the Society. But great as was the prestige of this learned body, and profound as were its claims to our veneration and respect, I could not but regret to notice how unpopular it was; how poorly for the most part its meetings were attended, and how many expressions of dissatisfaction were heard, both within and without its walls. The subjects of complaint were various and too numerous to mention: but most of them seemed to me to arise out of the spirit of exclusiveness which now prevailed in the councils of the Society. This, if it did not originate from, was annually kept up by, a regulation new in the history of the Society and opposed to the terms of its charter—that of limiting the election of Fellows to the number of fifteen annually. At the time when this innovation was introduced, there seems to have been an avowed design to permanently reduce the numbers of the Fellows, not to promote the objects of the Society, but for the sole purpose of enhancing the dignity of the Fellowship. And the numbers were diminishing year by year; the majority of the candidates for admission were rejected; and many deserving and eligible persons were deterred from becoming candidates by the small chance open to them in so scanty an election. I resolved to bring the subject before the Fellows at the annual meeting in November; and having obtained necessary information by reference to the 'Proceedings,' and to Weld's 'History of the Society,' without consulting with anyone except Colonel Strange, whom I knew to be an independent Fellow, I proceeded as described in the following statement:—

'At the last Anniversary Meeting of the Royal Society on November 30, I thought it my duty to call the attention of the Fellows to the present limitation in the election of new Fellows, and its injurious effects on the usefulness and resources of the

But such gradual change of density (as might be caused by heat, or by watery vapour) would certainly produce diversion of sound by *refraction*;—and by that principle would I explain the facts described by Professor Tyndall. The power of air of different density to refract sound can be demonstrated by a thin caoutchouc ball inflated with carbonic-acid gas, concentrating sound, as a lens does light. I tried to give the discussion a good-humoured turn by the conclusion that whilst the Professor had the advantage of appearing as the *man of reflection*, I must still declare myself to be a *refractory man*.

society, and I concluded with a motion (which was seconded by Colonel Strange), recommending the subject to the consideration of the Council. As there seemed to be some difference of opinion among those who spoke, it was thought better to leave the matter in the hands of the Council, without pressing the motion; it was therefore withdrawn; but I think it right to bring the substance of my address before the Fellows at large, with some additional matter bearing on the subject.

'Mr. PRESIDENT,—

'If I feel myself called on to offer an apology for occupying your attention in this, the fortieth year of my Fellowship, it is chiefly to express my regret that professional engagements (professorial and practical) have so much engrossed my time and strength in past years that I have been unable to take any active part in the proceedings of the Society. What brings me now before you is the subject of the present limitations in the election of Fellows. We now have every year long lists of candidates for the Fellowship, varying from 45 to 60 in number, and from these only fifteen, from a third to a fourth, are recommended by the Council for election, the rest waiting until increased merit, or perchance increased interest, may make them more fortunate in future years. But still the general result of this limitation has been the rejection of the majority of the candidates. Such a restriction in the election of Fellows was not contemplated in the original constitution of the Society, nor can any warrant be found for it in its charters, or in any of its proceedings, until the year 1847. Before that date, candidates were proposed at ordinary meetings, and after their certificates had been suspended during five ordinary meetings, they were ballotted for by the Fellows. About that time this mode of election was considered unsatisfactory, being often determined less by the scientific merits of the candidates than by personal interest, which led to much canvassing and interference with the proper business of the Society. Then were enacted the present rules, which restrict the election to once in the year, and refer the list to the Council to select not more than fifteen, to be recommended to the Society for election. A reference to the Council is both fair and judicious, as thereby the claims of the candidates are submitted to the deliberate consideration of men chosen for their character and eminence in their respective departments, and therefore the more likely to be correct and impartial in their decisions.

'But the limitation of the selected candidates to fifteen, or to

any fixed number, appears to me neither judicious nor just. It is so entirely unwarranted by the terms of any of the charters, or by the original plan of the society, that it is at least doubtful that such limitation is legal;[1] and that it is injudicious and injurious to its best interests, will, I think, be obvious, when we compare the constitution and objects of the Society with its present position and prospects.

The Royal Society is a voluntary association of private gentlemen, formed for the purpose of 'improving natural knowledge;'[2] and the only necessary restriction in the election of candidates for the Fellowship is, that by their works they should have proved that they are able and willing to promote this end. I would abate nothing in the standard of qualification, which should require of the candidates evidence of their industry as well as of their sound scientific attainments: and as these may be more accurately judged of by the Council than by the Fellows at large, it seems proper that the Society should be thus advised as to the eligibility of the candidates. But surely as many as may, in the judgment of the Council, come up to a fitting standard, deserve to be received into the society, without limitation of numbers. In this age of progress and expansion, when population, commerce, enterprise, and wealth, increase in enormous ratio—when letters and knowledge spread like a mighty flood—and when the cultivators of science in the course of fifty years have multiplied a hundredfold—in this age of teeming inventions and discoveries and gigantic applications of science—is this a time for the Royal Society to limit its numbers and stand still—nay, even to dwindle down by the yearly losses from its ranks?—losses which since this Procrustean process was put in force, have reduced the numbers of Fellows from 841 to 572, a falling off of more than one-third in 27 years.[3]

It may be fully admitted that before the restrictions were made, the elections went on without due discrimination, being often carried more by personal influence than by merit. A process of selection became necessary; but its object should have been to improve the quality of the renovating material; not to reduce its quantity.

I know that there has been a prevalent outcry about keeping up the dignity of the Fellowship by diminishing the numbers, keeping it select, and so exalting the honour attached to it. Then the example of the French Institute is cited as worthy of imitation by the

[1] See Note A in Appendix.

[2] See Note B in Appendix.

[3] See Note C in Appendix.

Royal Society. It is hardly necessary to point out that the Institute is totally different from the Royal Society in its origin, in its constitution, and in its objects. It was instituted and endowed by the French Government for the purpose of conferring distinction and emolument on a few persons of the most exalted merit; and although the elections are nominally by the votes of its members, they are subject to the control and decision of the Government. I repeat, the Institute of France is a national establishment under the Government. The Royal Society of London is an independent association of private individuals, incorporated by Royal Charter, for the sole purpose of 'improving natural knowledge.'

If the chief object of the Royal Society were to aggrandize the dignity of the Fellowship, by reducing its numbers and reserving its honours for a chosen few, on the plan of an exclusive club, there would be some pretext for the present restriction; but when we call to mind that the real purpose of the Society is to 'improve natural knowledge,' we can see no reason to exclude any number who have proved themselves to be qualified to promote this end; and so far from the Society being lowered by such a mode of filling its ranks, it would rise in power and in dignity to a wider and a higher sphere of action, and thereby maintain a more exalted position at the head of advancing science.

Can it be said that we are not already straitened by our past restrictive measures? Last year one of our most distinguished Fellows, who has enriched our Transactions with many inestimable contributions, complained of having been 'warned, if not remonstrated with, on the score of cost of illustrations;' implying *financial* difficulties in the way of his labours to 'improve natural knowledge,' and prompting him to suggest measures of economy by retrenchment in the Secretaries' salaries. I would rather recommend, by *more liberal policy in the admission of Fellows*, to improve the finances, as well as increase the strength of the society; then the salaries of those officers would be counted as a proper indemnity for their time, in addition to the honour of position which their valuable services deserve.

And are there no difficulties in finding among the Fellows those qualified and willing to perform the arduous, albeit honourable, offices of members of the Council, and of members of the several scientific Committees, which form the working body of this society? The increasing number of trusts devolving on the society, as mentioned in our President's address, shows enlarging responsibilities; and if this society is to hold its position at the head of the scientific institutions of the country, these and other demands on its opera-

tions will go on increasing, and requiring a larger constituency to supply men able and willing to carry on the work. Fellows of the society generally, know little of the constitution of the scientific Committees; but if they are to judge by the composition of the Council, as presented in the annual house list, the choice seems limited, for the same names crop up so repeatedly, as to suggest the idea that the management of affairs is in the hands of a few, and but for the high character of the parties concerned, might be open to an imputation of favouritism or cliquism.

To avoid all these straitening embarrassments, it is only necessary to return to the liberal and expansive principles of our founders and predecessors, and without any limitation of numbers, admit to our ballot every candidate whom our Council shall judge well qualified to contribute to the great object of the society, *the improvement of natural knowledge*. The average number of candidates for admission during the last ten years has been above 52, and in all probability the number would increase if the limitation were removed; for (as remarked by Colonel Strange) many deserving men are deterred from coming forward, by the certainty that a large proportion of candidates must be excluded under the present restrictions; but whether increased or diminished, the selection would be more equitably determined by merit, without any reference to numbers.

It has been objected that the Council, although willing to select 15 as the most eligible out of 50 or 60, would not like to incur the odium of passing judgment on any as ineligible; but the objection is more apparent than real. The selection of 15 by the Council, practically involves the rejection of the rest by the Society for that year; and the keeping the candidates on the list for subsequent years, does but enhance the humiliation by repeated rejections of those who under the present limitation must always form a majority. Speedy justice to the deserving, and a prompt and frank refusal to those who fall short in their qualifications, will place the former in their proper rank of usefulness in the Society, and will teach the short comers, if they have it in them, to work up to a higher standard for 'the improvement of natural knowledge.' Doubtless this must prove a serious and arduous duty for the members of the Council; but an office, high and honourable as theirs is, must involve grave responsibilities in the interests of the Society and of science at large; and it is in the firm and conscientious fulfilment of their trust, without fear or favour, that we may be entitled to expect the Royal Society to assume its proper dimensions, and so to

rise in eminence as well as in numbers and resources, as to hold its honourable position at the head of the scientific institutions of the world.

CHARLES J. B. WILLIAMS, M.D., F.R.S.

President of the Royal Medical and Chirurgical Society, &c.

49, Upper Brook Street.
December, 1874.

APPENDIX.

NOTE A, page 449.

Only in one of the earliest meetings of the Society, 12th December, 1660, it was voted 'That the stated number of this Society be five-and-fifty;' and that Peers and Fellows of the College of Physicians, if they so desire it, may be admitted as Supernumeraries; but neither in any of the charters nor in any subsequent proceedings of the Society is any such limitation mentioned.—*Weld's History of the Society, vol. i., page* 68. In the same volume, page 459, will be found the following passages relating to the legal bearings of this subject:—

'In the early part of 1728, Sir Hans Sloane brought forward several propositions involving considerable changes in the constitution of the Society. One of these was, "To make it compulsory for every candidate to be approved by the Council, and recommended by three Fellows, one of whom, at least, was to be a Member of Council, before the candidate could be put to the ballot." This proposition was passed into a statute, and acted on from 1728 to 1730, all the candidates being approved by the Council before being put to the ballot. In the latter year, the expediency of limiting the number of Fellows was taken into consideration; but before making any statute on this subject, a case was drawn up for the opinion of the Attorney-General, embodying these queries:—"Whether it is any infringement of the rights and privileges of the Fellows, that a candidate should be approved by the Council before being balloted for by the Fellows generally, considering that the rejection of a candidate by the Council does not disqualify him from being put up again?" and, secondly, "Whether the Council cannot, by virtue of their general power of regulating the body, limit the number of members thereof; or, at least, make such laws as may check the too great increase of the body with new members unfit for answering the end of the Institution?"

'The opinion of the Attorney-General on the first query was, that "The Charter having joined the President, Council, and Fellows together in the elections of Fellows, as members of the entire body, and having directed such elections to be made by a major part of them all, without giving any preference in those acts to the Council, I think the Council should not make a statute whereby to assume a negative to themselves, which seems to me to be the effect of this statute. Therefore, I apprehend, this statute not to be warranted by the Charter."

'The opinion on the second query was: "Considering that the Charter hath left the body at large without limiting the number of Fellows, and considering also the nature of this foundation, I think the Council cannot make a statute to limit the Fellows to a certain number. But they may make reasonable statutes, or bye-laws, to describe and ascertain proper qualifications of persons to be elected Fellows in such manner as may best answer and promote the ends of an Institution so useful to the learned world."

'This opinion, emanating from so profound a lawyer as the Attorney-General, (afterwards Lord Chancellor Hardwicke,) led to the repeal of the statute requiring candidates to be approved by the Council.' Again, in Nov. 1846, the opinion of the Attorney and Solicitor-General (Sir John Jervis and Sir David Dundas) was requested and obtained to a similar effect:—"That the Council cannot, by virtue of the general power of regulating the body, given them by the Charters, pass a statute limiting the number of ordinary Fellows to be elected in any one year."

'Notwithstanding this opinion, the limitation was practically effected in 1847 by the Society requiring the Council "to recommend to the Fellows the most eligible candidates, such selected candidates not exceeding fifteen in any one year." Thus, without breaking the letter of the law, its spirit was frustrated by this limitation of the Council, which, although not binding to the Fellows, could not be evaded without a canvass in opposition—a proceeding disagreeable and vexatious, which would not be conducive to the peace of the Society.'

The following opinion of Baron Cuvier (quoted by Mr. Weld in his 'History of the Royal Society') adverts to the constituency of the Royal Society, as *necessarily very numerous*.

'La Société Royale de Londres, la plus ancienne des Académies des Sciences qui subsistent aujourd'hui, et, sans contredit, l'une des premières pour les découvertes de ses membres, ne reçoit aucun secours du gouvernement, et ne se soutient que par les seules contributions de ceux qui la composent; en conséquence, il a été nécessaire qu'elle fût très nombreuse, et, par une conséquence non moins nécessaire, comme dans toutes les associations politiques où la participation des citoyens au gouvernement est en raison inverse de leur nombre, les hommes auxquels elle confie son administration exercent sur ses travaux, et, jusqu'à un certain point, sur la marche et sur les progrès des sciences, une influence plus considérable que nous ne pourrions nous le figurer dans nos Académies du Continent.'—*Mémoires de l'Institut*, 1826, *page* 219.

Note B, page 449.

The title of the Society, given in the second Charter (1663), '*Regalis Societas Londini pro Scientiâ Naturali promovendâ*:'—'The Royal Society of London for Improving Natural Knowledge,'—and retained ever since, is remarkable for the precision and aptitude of its meaning, considering that it was adopted more than two centuries ago, when the English language was not used with the exactitude which it has since acquired. The object of the Society was to *improve* natural knowledge, in quality as well as in quantity—to increase its accuracy as well as its extent; and the word *natural* was probably used, not only as Dr. Paris has suggested, in contradistinction to *supernatural*, but also in the same sense as the corresponding Greek term τό φυσιχὸν, and the French and English synonyms, *physique* and *physics*, which are equally distinguished from *metaphysics*. Thus the business and design of the Royal Society are defined by Hooke, its first experimentalist:—

'To improve the knowledge of natural things, and all useful arts, manufactures, mechanick practices, engynes and inventions by experiments (not meddling with Divinity, Metaphysics, Moralls, Politicks, Grammar, Rhetorick, or Logick').—*MS. Papers, Weld's History of the Royal Society, vol. i., page* 46.

In truth, the distinctive object of the Royal Society at its foundation was to promote the study of nature through observation and induction, the methods recently developed by Bacon, to the exclusion of the Aristotelian philosophy, and other metaphysical systems which had hitherto been taught in the Schools. Its success is displayed in its Philosophical Transactions, a series of Scientific Essays without a parallel in history, but essentially progressive and expansive in their nature, and requiring continually enlarging contributions and means to sustain their character.

NOTE C, page 449.

Table showing the number of Candidates, Elections, Deaths, and total number of Fellows in the Royal Society in each year, from 1841 to 1874. Compiled from the 'Proceedings.'

Date	*Candidates*	*Elections*	*Deaths*	*Total of Fellows*
1841	No record.	39	18	827
1842	ditto.	20	26	825
1843	ditto.	23	13	830
1844	ditto.	19	26	824
1845	ditto.	23	14	828
1846	ditto.	26	17	841
1847	ditto.	21	29	828
1848	ditto.	14	22	812
1849	ditto.	19	23	808
1850	ditto.	16	15	No record.
1851	38	15	26	777
1852	34	15	27	767
1853	32	19	25	759
1854	30	16	28	745
1855	38	17	32	729
1856	40	15	24	720
1857	43	15	17	715
1858	36	17	27	706
1859	34	17	27	691
1860	47	22	35	677
1861	48	16	30	657
1862	50	15	15	660
1863	45	18	22	657
1864	47	15	18	655
1865	53	19	30	639
1866	45	15	29	626
1867	61	16	24	617
1868	53	16	29	600
1869	45	17	23	597
1870	53	17	17	597
1871	50	16	18	595
1872	59	16	22	587
1873	53	16	27	571
1874	52	16	13	572

In the above list, the Foreign Members are not included in the elections and deaths; but they are counted in the total numbers of Fellows, and as they amount to about fifty, that number should be deducted from the totals of each year to represent the number of Ordinary Fellows. The number by which the elections exceed fifteen, represent the privileged Candidates (Peers and Privy Councillors) who are not subject to limitation. The obsequiousness to title and rank, which may have been politic in the infancy and poverty of the Society, is hardly consistent with its present position and dignity. But as the facile admission of the privileged classes is clearly authorised in the statutes, and yet does not operate largely, it hardly calls for interference: yet the unrestricted election of these candidates, sometimes with little or no scientific pretensions, is an additional argument against any numerical limitation of those whose claims are founded on scientific work.

Before the end of the year I received a letter from the President, Dr. Hooker, informing me that a Committee had been nominated to go into the matter of the election of candidates for the Royal Society. He adds the remark, 'I am always glad to find the Fellows taking a good share in the working of the Society.'

The resolution of the Council was:—That a Committee be appointed to consider and report to the Council upon the Statutes relating to the selection of candidates for election to be recommended by the Society: the Committee to consist of the President and officers, and Mr. Evans, Dr. W. Farr, Sir W. R. Grove, Dr. Guy, Mr. Merrifield, Dr. Sharpey, and Dr. C. J. B. Williams.

The Committee met January 15th.

The details of the proceedings must be considered confidential: but the general result was a total rejection of my views on the subject, and a reaffirmation of the limiting innovation of 1847. This becomes less surprising when it is known that two members of the Committee had also 'taken a very prominent part in the discussion' which terminated in the adoption of this mode of election, and were naturally in its favour. In private conversation afterwards, Dr. Sharpey said to me, 'No doubt your view is right in the abstract, but it would not work for the greatest advantage for the Society.' And here lay the difference: the other members were all intent on the *Society*, its status, its dignity, its distinction and exalted position, and the select appropriation of its honours. I had

ventured to point to the *object* of the Society—the improvement of natural knowledge, as something above the Society itself. But as it would be vain to discuss the abstract question, I will pass to the report of the Election Statutes Committee, with a few comments on some of its clauses.

'Report of the Election Statutes Committee.

'The Committee appointed to consider whether it is desirable or not to make any alterations in the Statutes relating to the Election of Fellows, have given to the subject referred to them the careful consideration which is demanded by the importance of these Statutes, not only to the Royal Society, but to the general body of workers in science in the kingdom.

'The status of the Royal Society and the widespread recognition of the value of its Fellowship render it highly desirable that, on the one hand, no one shall be admitted to the Society but those who are worthy of the honour, while on the other, no one who is worthy shall be excluded from the Society, nor even suffer undue delay in entering it.'

Comment. The primary consideration is—not the great *purpose* of the Society, and the efficiency of its *work*—but its '*status*,' the 'widespread recognition of *the value of its Fellowship*,' and the '*honour of admission*.'

'At the outset of the deliberations, the Committee unanimously agreed to recommend the maintenance of the principle of the existing Statutes; that is to say, to leave in the hands of the Council, as at present, the duty of selecting the Candidates to be presented to the Society for election.

'They further agreed, *nemine contradicente*, that the number so selected annually ought to be limited.'

Comment. To this clause, as may be supposed, I did *not* agree; but being alone, I said it was useless to vote. This was expressed by the phrase, *nemine contradicente*.

'The only questions that remained therefore were, ought the number thus limited to be less than at present, greater than at present, or to remain as it is? And, practically, the choice was limited to the last two.

'As a preliminary to the discussion of these alternatives, the Committee thought it desirable to ascertain what may reasonably

be expected to be the strength of the Society if the present limitation remains in force.

'The answers of the Fellows of the Society to a circular addressed to them by the Committee, together with other statistical evidence as to the value of life at Election, and the average duration of life of the Fellows, have been carefully considered by several Members of the Committee who are specially qualified to form a judgment on such matters; and their conclusion is that, under the present mode of Election, the average number of Fellows, exclusive of the Foreign Members, may be expected to be about 430.'

Comment. These clauses show that the Committee or their more active members contemplated the reduction in the number of the Fellows as a normal result of the present mode of election; and only wished to determine its ratio.

'Considering that the Royal Society is no longer, as at the time of its foundation, the only scientific corporation in the kingdom, but that numerous Societies have arisen which are devoted to one or other of the sciences, and subserve the purposes of the specialist, and of those who simply take an interest in scientific subjects, it appears to be thought generally desirable that the Royal Society should be distinguished by consisting of those persons who may be regarded as the representatives of, or the most active and successful workers in, the different departments of science; in association with promoters of scientific research and with men of signal eminence in statesmanship, art, or letters.'

Comment. So far as I can interpret this not very lucid clause, it seems to intimate that inasmuch as 'numerous other societies have arisen which are devoted to one or other of the sciences,' the ground which they have taken should be abandoned by the Royal Society (although all belonging to its domain of 'natural knowledge'), and that the Royal Society should have a new distinction as 'consisting of representatives of, or the most active and successful workers in, the different departments of science,' &c. In other words, the Royal Society is to be the *crème de la crème* of scientific society. Not an encouraging prospect for obscure, however genuine, improvers of natural knowledge!

'The Committee have carefully considered whether the present limitation of annual elections to fifteen necessitates any undue delay

in the election of persons who answer to the foregoing description into the Royal Society. They find no ground for asserting that it does, and therefore they have unanimously agreed to recommend that no change be made in that number at present.'

Comment. I cannot recollect that I was present during the consideration here alluded to: if I was, I certainly should *not* have agreed to recommend '*no change*,' and the word 'unanimously' is incorrect. For any proceedings of the Committee which took place after I quitted London in September 1875, I am not responsible. It was consistent with my knowledge that several deserving candidates had been grievously disappointed at the postponement of their claims.

In the President's address of the next year, November 30, 1875, the subject was noticed as follows:—

'*The Election Statutes.*—At our Anniversary of last year the attention of the Meeting was called by Dr. Williams to the present limitation in the election of ordinary Fellows; and though no action was taken at the time, the subject appeared to me to be one so deeply affecting the interests of the Society, that I did not hesitate to take the earliest opportunity of submitting it to the deliberations of the Council. This resulted in the appointment of a Committee to consider the whole question of the "Election Statutes."

'In the mean time Dr. Williams addressed to myself a letter embodying his views on the subject, which, having been printed and circulated throughout the Society, requires my acknowledgment from this Chair, and is entitled to the most full and careful consideration. Therefore, while disclaiming the slightest intention to criticise the letter in a hostile spirit, and while fully appreciating the interest in the Society's welfare which caused Dr. Williams to raise the question of a revision of the Election Statutes, I feel bound to remark that I cannot think he had considered the question in all its aspects, or made allowance for the effects of that inability on his part, which he so candidly admits and regrets, to take, during forty years' Fellowship, any active part in the proceedings of the Society.

'Had it been otherwise, he would surely not, without some reservation, have instanced the reduction in the number of Fellows since the present rules have been in force as a loss to the Society which had not been anticipated; he would have been aware that the rules now in operation had been approved by the Society individually

and collectively, and with ample deliberation, before their embodiment in the Statutes. He would also have known that it was with the full knowledge and intention that such a reduction would and should result from this step that the rules were adopted, and that the rate and amount of reduction formed the subject of investigation and report by an eminent Fellow and Statistician, Mr. Galloway; and lastly, that the rate of reduction, as then anticipated and taken into account, has been slower than was calculated, and that our number for some years to come will still be in excess of that which in 1847 was, and I have reason to believe still is, thought large enough by the great majority of our Fellows.

'Again, it is undoubtedly under a misapprehension that it is asserted that the general result of the present limitation in the number annually elected has been the "rejection of two thirds or more of the candidates." The fact is that (putting aside the application of the term "rejection" to that which, in the majority of cases, is merely "postponement") two thirds of all whose names have been suspended have actually been elected, not rejected; and the average duration of suspension of the elected candidates has been under two years. Furthermore, from the one third who have not been elected are to be excluded the deaths, the withdrawals, and those whose proposers have omitted to suspend their names a second year. Subtracting these, the "caput mortuum" is not only a very small one, but is one which the Society would not, in my judgment, wish to have taken into Fellowship.

'It has been observed, and justly, "that the Fellows know little of the composition of the Scientific Committees," and that, "if they are to judge by the composition of the Council, the choice seems limited." With regard to the first observation I need hardly remind you that the Council Minutes, in which the nomination and duties of the Committees and the names of their members are detailed, lie open daily to the inspection of the Fellows; and with regard to the second, that Dr. Williams himself would, were he to inquire, be surprised to know how few resident Fellows there are who, being competent, are both willing and able to serve on the Council. I have had some experience in public business, and can confidently affirm that, for number and duration of sittings, amount of work brought before them, and amount of thought devoted to that work, I know no labours of the kind more various, onerous, and engrossing than those of the Council and Committees of the Royal Society. I have had at various times during the last quarter of a century much experience of these Councils, and never knew a year in which, of the ten Members of the Council who, in accordance with the Charter,

have to be replaced, there were not some who had attended a very limited number only of its meetings; and as by a Minute of Council five names of Fellows who have never previously served must annually enter into the composition of the new Council, and as these five are, for the most part, chosen from comparatively new Fellows, it cannot be said that sufficient fresh blood is not annually incorporated. But for the punctual attendance of the Members of Council, the officers could not carry on the Society's business. These latter meet punctually at 1 P.M. on every Council-day (sometimes at intervals of a week), and sit continuously until the Council breaks up, which is rarely before six.

'And if it is difficult to obtain Members to sit in the Council, it is in my experience far more difficult to secure attendance at the Committees, which in many instances include no Councillor among their number. To go into the reason for this is here not necessary; it is sufficient to say, that additions to the number of Fellows annually elected would not overcome the difficulty now in question.

'I have but one remark to make further on this subject. It is asked, "Are we not straitened by our restrictive measures?" and it is implied that we are unable to meet the cost of illustrations to papers communicated by Fellows. The following statements, given on the Auditors' authority in my last year's Address, have escaped the attention of the writer of the letter, viz. that "there was no cause for apprehension in respect of the Society's funds or income," and that "there is no want of means for providing illustrations to papers communicated to us for publication."

'I have felt it to be my duty to you to enter with some detail into Dr. Williams's earnest appeal to me.'

At the time of the delivery of the preceding Address I had left London, and was residing at Cannes, and did not receive it until some months later. My interest in the matter was obviously not personal, as I was about to withdraw from the scene; but having been led to entertain these views from what I had witnessed during several years of the working of the Society, and further confirmed by special reading and inquiry, I considered it my duty to bring them forward as I had done. But as neither the report of the Statutes Committee nor the part of the President's Address referring to the subject contained any reply to, or even evidence of having comprehended, my arguments, I was not disposed, in my peace-seeking retirement, to

agitate the matter further. I took leave of it therefore in the following letter to the President.

Villa L'Olivette, Cannes: March 8, 1876.

Dear Dr. Hooker,

Your Presidential Address did not reach me in my retirement until some time after its publication; and as I did not feel disposed to pursue the subject after the decision of the Committee and its adoption by the Council, I have delayed writing a reply, which nevertheless I owe, as much to your courtesy in the earnest manner in which you have entertained the question, as to the abiding issue of my own deliberate convictions.

In answer to your remark that you cannot think that I had considered the question in all its aspects, and that I ought to have known that the reduction in the number of Fellows since the present rules were in force, was calculated and intended, with the sanction and approval of the Society—my reply is that I *was* aware of this intention, and disapproved of both it and its results, as contrary to the letter and spirit of the foundation and constitution of the Society, and as injurious to its best interests. The reduction and limitation of this first of scientific societies, at a time when science itself, in its growth, and in its cultivators, is enlarging yearly at a prodigious rate, and when so many other scientific bodies have sprung up and are expanding in unrestricted freedom, does seem a solecism and an anomaly unworthy of the age.

And when you complain of the difficulty of getting a sufficient number of resident members of Council and of Committees, it does appear to me obvious that an enlarged constituency would prove the best means of supplying men able and willing to carry on the work. I confess that I cannot understand your opposite conclusion 'that additions to the number of Fellows annually elected would not overcome the difficulty.'

With respect to the finances of the Society, your statement given on the Auditors' accounts in your Address of the previous year, that 'there is no want of means for providing illustrations communicated to us for publication,' did not escape my attention; but although encouraging for the future, it did not set aside the positive fact complained of by one of our oldest and most eminent Fellows.

In conclusion I can only express my surprise and regret that the Election Statutes Committee have entirely disregarded the original liberal constitution and object of the Society, as declared at its foundation, and confirmed by charter, *as consisting of an unlimited*

number of Fellows, elected for the purpose of improving natural knowledge; and have enacted for it a new constitution, (with continued restriction of numbers,) in these terms: 'Considering that the Royal Society is no longer, as at the time of its foundation,' &c. (See above in Report.)

Thus the leading object of the Society is to be no longer the free advancement of science, but *the distinction of the Royal Society from the numerous Societies which have arisen devoted to one or other of the sciences, and a selection of representatives of the departments of science, in association with promoters of scientific research and men of signal eminence in statesmanship, art or letters:* its source of supply being still restricted to the number of fifteen per annum.

Against the illiberal and exclusive spirit of this innovation, I would have raised my voice, had I been in England. I have now only to relieve my conscience by protesting my abiding conviction that the great object of the Royal Society of London should be its original one—to improve natural knowledge with a liberal spirit, and not to aggrandise the honour of the Fellowship by reducing its numbers and efficiency.—Yours faithfully,

C. J. B. Williams.

CHAPTER XLIV.

CONCLUSION OF LONDON LIFE. RETIREMENT TO CANNES. 1875–1883.

Need of a better climate for winter. Bright skies of Riviera most attractive. Hyères. Cannes excelling in scenery and recreations. Its popularity and rapid increase. First residence, Villa L'Olivette, North Cannes. Second, Ceres, West Cannes. Villa du Rocher, East Cannes, purchased. Description of garden and grounds. Gardening supersedes sedentary occupations. Cordial reception by Cannes society. Church influence. Multiplication of Hotels and Villas. Rides and drives unequalled elsewhere. Pure water supply. Drainage—Difficulties and defects. Typhoid fever.—Exaggerated reports. Sanitary measures adopted. Captain Galton's plans.—Still under consideration. Prompt measures urged and worst evils pointed out—Defilement of streams. Beneficent Institutions.—Infant Protestant School. Astronomical Recreations—Comet of 1882. Author's communications to 'Nature.' Shadow beyond tail of Comet. Transit of Venus.—Represented in water colours.

This was the year of my retirement, after forty-five years of London practice, and fifty-five years of professional life. The grey-paired brougham with striped-grass wheels was no longer to be seen in the London streets. Although rarely laid by with illness, my health had become so much impaired of late years, that I had not much prospect of long enjoying the rest from my labours. The smoke and fog of London during more than half the year told on me, and quite determined me not to pass another winter in it. Through God's mercy I have been spared now nine years longer, and during that time have recovered much vigour of both body and mind; and making allowance for the infirmities of age, I have cause to be thankful for much enjoyment of life.

Having made climate a subject of special study, I had long made choice of the Riviera as the most eligible place for retreat. I knew from several visits, as well as from general report, that the skies were brighter, the scenery more varied, and the soil

generally more salubrious than at other places of winter resort, even at a greater distance. I had been in the habit of sending patients to several chosen spots, and advantages as well as disadvantages were found in each. Hyères, as the nearest, and yet most southerly, I generally put first in the list: but for a long time it was better known to the French than to the English. Since however I sent my friend Dr. Griffith there, more than twenty years ago, very much to the benefit of his own health, as well as of the many whom he has had under his charge, it has been one of the favourite winter retreats, particularly suited to those preferring a quiet life. Nice being a city, and long famous for its climate, had more attractions for those who needed variety and amusement. Mentone and Cannes were more recently noticed, and soon found favour with health-seeking travellers. But I have not space for further mention of other places of resort. The special works on climate, by Dr. Henry Bennet, Dr. Marcet, my son, and other writers will supply ample information.

My attention was drawn to Cannes, chiefly by Mr. Bellenden Ker, long my friend and patient, who was also one of Lord Brougham's most intimate friends. In passing through it on a tour nearly thirty years ago, its advantages had not struck me as remarkable. Early in autumn, we found the roads dusty, vegetation parched, only two second-rate hotels, and very few villas. Compared with Hyères, Nice, and Mentone, it seemed less sheltered, the hills behind being comparatively low. And I would still say that, as a whole, Cannes is not a well-protected place. The best situations are quite so: but many are open to winds from several quarters, especially the north-west (mistral) and east, which often blow with great force. Still the place proved more and more attractive after visitors tried it, and in the course of a few years outstripped all others in popularity, chiefly with English visitors; and this popularity, and the afflux of good society, led to increase and improvement of accommodations and comforts at a very rapid rate. There can be little doubt that the beautiful scenery of Cannes and its vicinity, and the great extent and variety of its walks and drives, have proved its great attraction. Enjoying in common with other places in the Riviera, the brilliant skies,

the wide expanse of the Mediterranean in all its hues of varying loveliness, and the rich luxuriance of temperate and semi-tropical vegetation, Cannes has the additional charm of the beautiful Esterel mountains and the Lerins isles in front, and an inland succession of ridges diversified by rocks, woods, and gardens, forming an endless variety of picturesque foregrounds to sea and mountains in the distance. And in point of salubrity, although there may be less completeness of shelter than in Mentone and other places hemmed in by higher mountains, there is an invigorating purity in the more open neighbourhood, and a security of dryness in the rocky character of the soil.

Such being the attractions of Cannes, it is no wonder that after a few weeks of reconnoitring we should choose this for our new home. From the glimpses of our enjoyment during our holiday tours, the reader may judge how delightful was this change from town, smoke, and toil, to such a climate, country, and repose.

In the first year I took a furnished villa in North Cannes, the 'Villa l'Olivette,' amongst the olives, at a distance from the sea, but within view, and of the Esterels also. This is in the limestone district, with overlying clay, which renders the air somewhat moister and softer than the granitic soil of East and West Cannes. It was well sheltered, except from the north-west, whence we sometimes felt the mistral severely. At first I thought I enjoyed the mistral, with its bright blue sky and dark steel-blue sea, speckled with breakers. On one such day, accosting a farmer, I said, 'Bon jour, monsieur; beau temps.' 'Beau temps! par exemple,' said he; 'pour moi c'est très mauvais temps!' And I soon learned to agree with him. It dries the throat, shrivels the skin, withers leaves and shrubs, and blights flowers.

Next year I took the villa 'Ceres' to the west, high on the granite hill under the Croix de Garde. The air here was very bracing, but there was good shelter from west, north, and north-east. Only from the east was the wind sometimes keen; and there was Corsica, often plainly visible, especially before sunrise, at a distance of 130 miles. The Esterels, with the bay of Napoule, were close to our west. Behind was a wilderness of pines and brushwood, and traversed by paths of schistose

sand, always clean and sparkling with mica. In many parts masses of rock are exposed and often take the form of red porphyry. This is often seen in the neighbouring Esterel mountains, forming beautiful features in the landscape, by contrast of the rich red rock with the bright green pines, and the blue tint of green in the transparent sea. Here were fine opportunities for landscape studies, and now, time to turn them to good account.

In the following year I had the good fortune to secure the freehold of my present villa in East Cannes, with between three and four acres of varied garden and woodland, which has fully answered all my wishes, and formed a delightful abode, in which we remain nine months in every year, spending the other three in England or Switzerland.

The villa is small, but well built, facing the south, standing at the foot of its rock of red porphyry, with gravel drive in front, elevated above a cork-tree grove, with a frontage of bright flowers. The property occupies a little mountain to itself, being the foremost spur of the Californian range, with a torrent ravine on one side, and the road on the other. Behind the villa rises the rocky eminence containing the upper garden, with its walks and shrubbery, and a portion of the wild wood of California, consisting of pines, cork-trees, the tall white Mediterranean heath, *Erica arborea*, &c. From a little kiosque, or tower, a view is obtained of Cannes and the whole sea view in front, from the Esterels and Basses Alpes beyond in the west, to the distant mountain tops of Corsica above the eastern horizon. Opposite are the Lerins Islands, with the Castle of the Man with the Iron Mask. I have lately added a lower garden and entrance to the east, laid out with grass mound, serpentine walks, and plateau on which stand a group of old pines. In front below are violet and strawberry beds, and an orange grove, with stables and coach-house.

The mere names of the several walks, will suggest further the variety and description of this charming retreat. The torrent walk: the rocky fernery and heather walk: the mimosa mount: the rocky mount: the reservoir rise: the coppice walk: the shrubbery ring: the aliagnes bower: the Corsica walk: the acacia mount: the rocky zigzag: the undercliff

serpentine: the mandarine hillock: the pine plateau: the orange walk: the cork-grove walk, which leads by the periwinkle path to the torrent walk, with which we began.

With such inducements and capabilities, it will not be surprising that we all became gardeners. I had previously little knowledge or experience in that line. But I found the occupation both interesting and salubrious; and not content with mere superintendence, with my own hands I planted many hundreds of geraniums and ferns. Roots of the latter I collected from the Californian woods, chiefly *Adiantum asplenium nigrum*, *trichomanes*, and *polypodium*. Maidenhair, too, I brought in abundance from certain calcareous springs near Isola Bella. For the first three or four years after coming abroad, I had no lack of bodily strength for such exertions; and I am sure the exercise was very beneficial and carried off morbid tendencies, which had been increasing during a long sedentary life. But in later years strength and activity have declined more than mental vigour; and I have entirely given up the long walks and rides that I used to delight in. Of course this is the effect of age: I have to be very thankful that my sight and mental faculties show no signs of failure.

For some years after my retirement, I gave my mind an almost complete rest, so far as regards professional or scientific writing. The only exception was in a not very profitable controversy with poor Dr. Leared on the sounds of the heart. With curious ingenuity he seemed to have got into a wrong groove on this subject, and fell foul of a statement of mine, which I considered to represent the views commonly received, for which, in connection with my experiments on animals, I claimed originality. I deem it unnecessary to notice the matter further here, as it has been already discussed (see Chapter XVI.), but some new facts and arguments may find place in a second volume.

We were welcomed with much cordiality by many friends at Cannes, several of them old patients; and my name was well known from my having sent so many visitors there. Mr. and Mrs. Woolfield (he was designated 'Prince of Cannes' by dear Dr. Edward Forbes, who introduced me) had been residents coeval with Lord Brougham, and always led the

hospitalities, and by founding and fostering the first English church, and in other ways, had promoted a happy Christian influence on the English colony at Cannes. Now there were three English churches, all well filled in the season; and a Presbyterian service well supplied by the Free Church of Scotland. There was indeed such an abundance of agreeable and friendly English society, which has increased year by year, that we hardly seem to be abroad, except for the brilliant skies and almost uninterrupted fine weather.

The increase of the place during the nine years of our residence is something extraordinary, hotels and villas having much more than doubled in number, and new boulevards and streets formed in every direction. On these I dwell not: but one feature of development deserves especial notice—the extension of carriage roads around, over, and beyond all the neighbouring hills, which supply drives and rides unsurpassed for extent, variety, and beauty of scenery, of land, sea, and mountain. I know of no place in Europe to equal it. I speak not from actual measurement, but I do not think I exceed the reality in saying that there are eighty miles of good roads for riding and driving within six miles of Cannes.

Another great advantage of Cannes is its abundant supply of pure water, through the Siagne river canal, from a distance of sixteen miles.

No such favourable report can yet be made of its drainage. Cannes, in common with all continental towns, has no complete system of drainage; but in the last two years partial attempts have been made to develop one, and the present Mayor and Town Council have made many earnest endeavours to improve the sanitary state of Cannes. At the request of the English physicians practising at Cannes, I published in the 'British Medical Journal,' on the 4th of February and 4th of November, 1882, statements on this subject; which represented the state of matters up to those dates, and the measures which had been and were to be adopted in the way of improvement. Typhoid fever had shown itself; but its amount had been much exaggerated; and it had been traced to defects in drainage and other evils which might be rectified. There was formed a 'Commission d'Hygiène' under the presidency of

the Mayor, to consider all questions relating to the public health; to take all steps necessary for its preservation; to bring the law to bear against all nuisances, and offences; and to carry out any further measures in the way of cleansing and drainage necessary for the security of the town and its vicinity. In 1882 the Mayor visited Paris, London, and other parts of England, for the purpose of obtaining the most recent information on the subjects of drainage, disposal of sewage, &c. And in the following year Captain Douglas Galton, C.B. F.R.S., visited Cannes for the purpose of advising the municipality in their efforts to improve the town. After full inspection and consultation with the medical residents, he drew up an able report, embodying a full consideration of the subject with details of plans for the thorough drainage and purification of the town and neighbourhood. These plans have been since under deliberation, and steps have been taken towards carrying them into effect; but financial and other difficulties stand in the way and render their complete fulfilment a work of time. Yet the time must not be long; and if the most strenuous efforts are not honestly and energetically made, the reputation of Cannes for salubrity will assuredly suffer. I have had recent experience of a most flagrant offence in the defilement of streams denounced in the following extract from one of my former papers in the 'British Medical Journal.' [1]

'Various endeavours have been made, and are still carried on, to prevent the contamination of the *ruisseaux*, or streamlets, one or more of which run down the valleys between the numerous little rocky hills on which Cannes stands. These little brooks carry off the surface water; and, in the rainy season, convey a considerable stream, which, in some places, is used by laundresses for washing linen. In dry weather, they cease to run; and the water, stagnating in pools, is apt to become offensive, especially if containing soap-suds. Several of these brooks have been cleared of stones and holes, and the beds narrowed by masonry into smooth gutters, in which there can be no stagnation. A public laundry, well supplied with water from the canal, has been built at the back of the town,

[1] If the offence here referred to is not promptly rectified, I shall consider it my duty to publish in the English journals a warning against the parties guilty of such outrages on the public health.

and has done much to prevent the practice of washing in the streams.

'But a more serious cause of contamination of these streams has been the too common, although illegal, practice of allowing drains from kitchens, and, what is worse than all, from cesspools, to be discharged into them! If I were asked to point out the most potent cause of insalubrity in Cannes, I would answer, without reserve, the escape of the contents or effluvia of cesspools into the houses and into the *ruisseaux*. Individual houses are poisoned by the leakage of cesspools under or near them, or by the entrance of their effluvia through inefficient water-closets; or through untrapped, imperfect, or unventilated soil-pipes, leading from the closets to the cesspools. But if, by overflow or leakage, through neglect or design, the contents of cesspools are discharged into an open *ruisseau*, the offensive matter grossly defiles the stream, which diffuses its stench and pernicious effects throughout its long meanderings, with aggravated activity where it lingers or stagnates in its course.'

Captain Galton would abolish cesspools altogether; and connect all closets directly with drains: but until a complete plan of drainage comes into operation, cesspools cannot be dispensed with; and they may be made quite safe and effective, if of adequate size, and careful construction, with strict provision for their being regularly emptied and cleansed; *and the most absolute prohibition enforced against their ever being allowed to defile the streams.*

In the case of villas and hotels, with a garden of some size, there is no difficulty in disposing of the contents of the cesspools. Once or twice in the year, or oftener, if necessary, they are to be poured into trenches of sufficient size, and covered with a depth of eighteen inches or more of earth. This effectually deodorises and disinfects the sewage, and appropriates it to the fertilisation of the soil. A great mistake, commonly made here, and still more in Switzerland, is to spread the sewage-matter on the surface of the ground, without burying it—so poisoning the air with its fœtor, and impoverishing the manure in its fertilising properties. The adoption of Moule's earth-closet system would supersede cesspools, water-closets, and their nuisances, altogether; and

would be, for the outlying villas with gardens, the best possible supplement to an improved drainage of the town of Cannes.

There are several most useful beneficent institutions which deserve the support of the English visitors at Cannes, and engaged the interest of members of my family. 'Les Amis des pauvres,' for aiding and relieving the industrious poor in cases of sickness or distress, is admirably carried on by a committee of ladies, and does much good at a small cost. Schools have been greatly needed in this country, for the education of the children has been much neglected, and very many of the adult population, and not the poorest only, can neither read nor write. This evil is diminished by the communal schools which are now generally established: but as no religion is taught in them, earnest Christians may be expected to aid the Protestant schools, which have been established chiefly by the efforts and contributions of English visitors. The infant school has been particularly successful: the children being taught by aid of music, singing, gesticulations, and drilled movements, in a manner that engages attention and amuses as well as instructs. These institutions are supported not only by subscriptions, but by concerts and fancy bazaars, for which ladies' talent and industry are taxed for drawings, fancy-work, trap-door spiders' nests, and numbers of pretty devices in flowers and other natural products of land and sea—all suggestive of ingenious and tasteful employment for truly useful objects.

It is unnecessary to notice further the various occupations found for the agreeable leisure now at my disposal and which never hung heavy on my hands. But in the last two years, in addition to daily meteorological observations of which I keep a register, I brought out my old telescope of 'sixty years since' (see Chapter I.), and took an occasional look at the heavenly bodies. I had another larger and more complete instrument: but this I gave to my third son Harry, who, having been a pupil of Professor Challis, and being a Fellow of the Royal Astronomical Society, was more likely to turn it to a good account.[1] But

[1] He has, however, been better employed. He has retired from the practice of the law; and has entirely devoted himself to visiting and teaching among the poor in a needy district of his brother-in-law's enormous parish of Swansea; where he has established a school with upwards of 200 children.

the smaller instrument was a remarkably good one, and having had it repaired and fitted with a new eye-piece by Browning, it answers my purpose very well. I have also a field binocular and a small aluminium mountain telescope by Pillischer.

The first astronomical object that riveted my attention was the splendid comet of last year. Travelling and bad weather prevented my seeing it till October 20, when I was astonished at its magnitude and brightness: and after making careful observations and drawings, sent one with the following description to 'Nature,' in which it appeared in the number for October 26, 1882.

'For several mornings past we have had fine views of the comet first seen in England by Mr. A. Common. I enclose a sketch taken this morning, as accurate as I could make it with materials at hand.

'It is chiefly remarkable (1) for the crescentic end of the tail, the lower or eastern horn being longer than the other; (2) for the distinctness of the shadow in the space beyond the tail—shadow obviously projected by the comet. Such a shadow I have never seen in any of the comets which have been under my observation during the last fifty years, nor do I recollect to have seen it described.

'I presume that the propinquity of this comet to the sun is the reason why the shadow is unusually visible, in contrast to the luminosity around it: but probably the peculiar clearness of our atmosphere renders the phenomenon plainer than it may be in England. In any case the appearance is interesting, in relation both to the nature of cometary matter, and to that of light and shade in space.

'C. J. B. Williams.'

Villa du Rocher, Cannes, France: October 21.

The woodcut in the journal was not a good copy of the drawing, particularly in omitting all appearance of the remarkable shade beyond the tail. The reality of this shadow was questioned by Major Herschel in a subsequent number: and in that for November 30 the following appeared.

'Since my first communication, with sketch of the comet, on October 21, which appeared in "Nature," vol. xxvi. p. 622, I have had good views on 21 out of 31 days. The fine weather and clear atmosphere of this place give exceptional facilities for the continued and frequent observations which are needed to obtain a knowledge

of so anomalous and surprising an object. Some windows of my villa command an extensive sky and sea view (including at times the mountains of Corsica, 130 miles distant), and from my bedroom —sometimes even from my bed—I have been able to watch the comet with ease for from a quarter of an hour to an hour, on each of those twenty-one days; using only a good field binocular in occasional aid of a strong natural sight. I have more powerful telescopes, but for this object they give no help; and I am not astronomer enough to avail myself of other instruments.

'The comet was seen in all its brightness on October 20, 21, 23, and 24, with its nucleus like a star of first magnitude, but elongated and nebulous—its tail beginning with slender stem, slightly curved, with downward convexity, and gradually expanding to its extremity, the diameter of which was about five times that of the head. The lower, slightly convex margin, was brighter, and more defined; but a strong nebulous light pervaded the length and breadth of the tail, shaded along the upper margin in gradually diminishing haze. The tail ended in an elongated crescent, the lower or eastern horn of which was longer than the other. Both horns were prolonged in faint lines, hardly perceptible, a few degrees further (as noticed by your correspondent Mr. Larden). No such prolongation could be seen from the hollow of the crescent, which terminated by a narrow fringe of diminishing light, beyond which was an oval patch of shade, *obviously darker than any other portion of the visible sky*. This appeared to me nothing else than a *shadow* projected by the comet on the space beyond the end of its tail. I cannot admit the correctness of Major Herschel's *suspicions*, "that this impression was produced by contrast only" ("Nature," vol. xxvii. p. 4). The still greater contrast between the brightness of the lower margin and the adjoining sky produced no such shade there *at that time*: later I shall allude to such a shade appearing there also. The ultra-caudal patch was obviously darker than any other spot of the sky: so it appeared to me, and my experience in landscape painting has given me some skill in appreciating lights and shades. I am quite aware of the difficulty of physically explaining the existence of light and shadow in the vacuity of space, but this is a question of pure observation, to which I invite further attention. Two of your correspondents, Mr. Larden of Cheltenham, and Mr. Cecil of Bournemouth, describe "a black rift in the sky," and "a strong apparent shadow" behind the comet—seemingly in confirmation of my observation.

'When the comet was next seen, after an interval of bad weather, on the 29th, it had lost in dimensions, but still more in brightness,

and its form was changed. The upper margin from the head upwards had expanded and become more feathery; so had the end of the tail, which had lost its crescentic form; the shadow beyond had quite disappeared, and was replaced by an ill-defined luminosity, losing itself in the darkness of the sky. The lower margin of the tail had lost less of its brightness and definition; and now if there was a shadow anywhere, it was along this edge, down even to the head of the comet; but the shade was much less marked than had been that beyond the tail, and I might have ascribed it to contrast but that it was not present when this margin was brighter and the contrast greater. This shadow is noticed by Mr. Cecil in "Nature," vol. xxvii. p. 52.

'The comet was well seen on October 30 and 31, and November 2, 3, 4, 6, and 7, gradually diminishing in brightness and in the definition of its outline, its light being now further paled by moonlight. So faint was it that I am not surprised at Major Herschel's description of its non-appearance in the London sky of November 5; but I cannot help "suspecting" that this was due not to moonlight only (as the testimony of others proves), but also to the gas-lit haze of the London atmosphere, which from fifty years' experience I know to be, at its clearest, quite sufficient to mask a faded comet, even although the brighter light of stars may still remain visible. On the 8th the comet was seen before moonrise, more distinct, although pale and hazy in outline; lower margin still the brightest, with a slight attendant shade. It was seen every day (except the 13th, 14th, and 15th) until the 22nd, with little other changes than that it was gradually becoming fainter, although still a conspicuous object in the dark sky from 2 to 5.30 a.m. On the 21st I made a careful portrait of it in oils, with its attendant stars, by the side of one that I had painted from the sketch taken October 21, when it was in its glory. The alteration which has taken place in the month is such that it now seems the mere ghost of its former self. The comparison strikes one as showing how much more it has lost in brightness and compactness, than in length and breadth. Is not this in exact conformity with what has been ascertained (see "Nature," vol. xxvii. p. 58), that the comet has been receding more rapidly from the sun than from the earth?

C. J. B. Williams.'

Cannes, November 23.

In a subsequent number, December 28, further observations were reported up to December 21, that the comet was becoming smaller and much fainter, with tail visible only in the absence

of the moon, about 8° long, and its nucleus like a nebulous star of the third magnitude. In the same number was the following account of the transit of Venus as seen from my villa on December 6.

'TRANSIT OF VENUS, December 6.

'In the morning here the sky was clear, and the sun remarkably free from spots. I noticed only 4 small ones on the disk: quite a contrast to the monstrous appearance a month ago.

'Being neither equipped nor qualified for technical astronomical observations, I did not attempt to do more than to give a popular demonstration of the transit of Venus to between 30 and 40 friends interested in the phenomenon. My experience of star-gazing was chiefly obtained upwards of 50 years ago, before I became otherwise occupied; and then I found for myself, that the best way of studying solar phenomena, whether eclipses or spots, was by projecting on white paper or cardboard, the image of the sun from the telescope, focussed a little beyond the point for direct vision through the dark eye-glass; extraneous sunlight being shut out by a napkin suspended around the telescope. In this way with a small achromatic of 32 inches focal length, and $2\frac{1}{4}$ inches aperture, we saw well all the chief features of the transit (which I need not describe, as this has already been done by more competent observers), and this without fatigue to the eyes, or the unnatural colouring, inseparable from looking through the telescope with darkened glasses. Further, as the time of sunset approached, at about 3.30 p.m., we had in our camera view the additional charm of the colours of the objects in view. As, in the Italian sky the golden orb sank with the dark planet spot on its disk, under brightly tinted clouds, shaded off in streaks of tender grey into the azure above, with the blue rose-tipped mountains of the Esterels beneath,—the scene was one as fascinating in beauty as it was interesting in science. All these tints appeared distinctly, albeit faintly, in the telescopic image on the card.

'One point was remarkable,—that whilst the shades of the mountains were all *blue*, the dark round spot of the planet on the sun was almost *black*. It was the darkest object in the field of view. Partly, but I hardly think entirely, this may be explained by its being higher, and less subjected to the decomposing power of the lower atmospheric layers. I have endeavoured to represent in water-colours this view of the transit of Venus.

C. J. B. WILLIAMS.'

Cannes, December 21.

This original kind of reminiscence of a very rare event was exhibited at the conversazione of the Royal Society in London last summer, together with the oil painting of the comet above mentioned. Several of the preceding observations have been translated into French in M. Flammarion's 'L'Astronomie.'

Thus the desultory studies of my early youth have not been without fruit, even in old age. More than sixty years had elapsed between my earliest and latest astronomical exercises. Some observations on the sun-spots are of more permanent importance, and must be reserved for another chapter.

CHAPTER XLV.

DISAPPEARANCE OF SUNSPOTS, COINCIDENT WITH INVASION OF EXTREME COLD. MORNING AND EVENING SUNGLOWS. 1883–84.

In March 1883 sunspots disappear--Sudden severe cold—Unprecedented snowstorm and destruction of trees and plants by cold—Rise of temperature with return of sunspots. Facilities for observing sun at Cannes—Second coincidence of same phenomena in December—Previous observations negative. Reasons for supposing that spots increase the sun's heat—speculative—From observation—Mr. J. F. Campbell's 'Thermograph.'

Morning and evening sunglows—Inferred to be many miles high. Clouds of icedust? Phenomena—Objective and subjective—Green moon proved to be subjective. Mr. Lockyer's sensational expansion of Mr. Meldrum's hypothesis of Volcanic dust. Better explained by Mr. Preece and Mr. Crookes—Such dust actually found--but its opacity a difficulty—Probably icedust formed in addition—and by its optical properties explaining increase as well as diversity of light and colour. Promoted by cold of night and winter. Indications of spectroscope. High nimbus.

Professional publications not undertaken—expecting due credit from other authors—Disappointed. Dr. Quain's Dictionary of Medicine—Author's letter complaining of his work being ignored—Consequent determination to write these Memoirs. Dr. Quain's reply. Conclusion of secular chapters.

After the disappearance of the comet, my attention was drawn to the spots on the sun, which were at this time generally in great numbers, it being a *maximum period*, which occurs in every ten or eleven years. But on February 28, 1883, I was surprised to find the sun without a spot. On March 3, I observed again, and still found no spot. The next day began a fall of temperature of 6° Fahr., with a high wind from the north-east, which continued till March 7, when there came on a heavy snowstorm, covering the ground to the depth of eight inches, and causing great destruction in my garden, bearing down and breaking many valuable trees and shrubs. This was followed by a fall of temperature to 5, 6, and 7 degrees below freezing, even in my sheltered situation: in

more exposed places it fell 4 and 5 degrees lower. Such cold had not visited Cannes before for 60 years; and it was the more remarkable as the previous part of the winter had been quite mild, only two or three times reaching the freezing point. This severe weather lasted till the middle of March, when the sunspots began to reappear, and the average temperature to rise in proportion. The destruction caused by this sudden and quite unexpected visitation of cold was unprecedented. Hundreds of geraniums, heliotropes, and other tender plants were killed in my garden, which usually here bear the winter well. A fine Datura, which had been constantly flowering summer and winter, perished; and a noble india-rubber tree 15 feet high, with its fine fleshy green bronze leaves, was turned in one night to a spectre of black rags. Extensive injury was done to the orange, lemon, and olive trees throughout the country. Enough has been said to show that this sudden invasion of intense cold was an extraordinary event; and the coincidence of it with the absence of sunspots was at least remarkable and deserving of attention, and as such I published in 'Nature' of April 26 an account of it with a meteorological diary during the period. On May 31 a second report appeared in the same journal carrying on the observations till the middle of May, when I left Cannes. From March 19 to that time I have made sketches of the sunspots on 49 days. The spots had appeared in varying but considerable numbers; and the temperature had continued steadily to rise with the season. Evidence was adduced that the intense cold in March was not confined to the Riviera, but had been felt throughout Europe and even in North Africa and America.

Observations of the sun not being easy in England, they were not resumed till on my return to Cannes on October 1, and some idea may be formed of our weather from the fact, that from October 1 to December 1, drawings were taken of the sunspots on 54 days; and that the spots were always present in fair proportions of numbers or size, until the last week in November, when they disappeared in an unusual manner. During November they have generally numbered from 12 to 28, some very large, with umbra and penumbra, and sometimes faculæ. On November 29 there were ten: November 30, seven:

December 1, six: December 2, two: December 4, one: December 5, NONE. On the two following days (6 and 7) only one very small spot had appeared on the eastern limb. Temperature had fallen from November 29, min. 45° Fahr. max. 58°·8 to December 7, min. 36° max. 49°·8. But the chill in the air exceeded the indications of the sheltered thermometer; and although the barometer was rising, snow was predicted. The prediction was verified, for on the night of the 6th was a storm of lightning and thunder, with hail and snow, which covered all the surrounding hills; even the Esterels, close to the sea, on which snow hardly ever lodges in the severest winters. Another winterly sign on this day, was the appearance of several flocks of wild fowl migrating in the sky. *This resembled only the extraordinary cold of the second week in March, and like it, was heralded by a disappearance of sunspots.* But this time it did not last long enough to bring hard frost on the earth in this mild climate. On December 8 the sunspots began to return in increasing numbers and size; and the temperature rose as follows. December 9, min. 46°·8, max. 50°·2; December 10, min. 42°·2, max. 50°·9. After this the sunspots and temperature varied little in proportion, till the 17th, when the spots diminished in size rather than in number, being from 7 to 12, but quite small: and the temperature was, 17th, min. 37°·9, max. 53°·4; 18th, min. 36°·1, max. 51°·8; 19th, min. 30°·2, max. 51°·7; 20th, min. 35°·9, max. 50°·4. On this day, however, a fresh group of 10 or 12 spots appeared on the eastern limb, which on the 21st were large, with white areolæ, and the minimum temperature rose to 43°·3 on the 21st, and 47°·8 on the 22nd.

Without taking account of this last instance, we have thus the evidence of two remarkable coincidences of absence of sunspots and invasion of extraordinary terrestrial cold. The first in the second week in March: the second in the first week in December. Further observations will be required to prove that these facts stand in relation of cause and effect: but there is an increasing probability in the hypothesis that the sunspots have a direct influence on the earth's heat.

Opinions of natural philosophers hitherto have greatly varied as to whether sunspots increase or diminish the sun's

heating power. Professor Young in 'The Sun' quotes these words of Balfour Stewart written in 1878:—'It is nearly, if not absolutely impossible, from the observations already made, to tell whether the sun be colder or hotter, as a whole, when there are most spots on his surface.' Dr. Young cites further opinions on both sides, without arriving at any definite conclusion.

My previous impressions on the subject were worth little, inasmuch as they were not founded on sufficient facts, observed by others or by myself. Nevertheless I had the impression that the sunspots are concerned in increasing the sun's heat. Most observers, from the time of Sir W. Herschel, seem to consider the spots as holes in the photosphere, through which the darker interior of the sun shows itself. But because darker, is it necessarily less hot? If light and heat were identical, or their vibrations mutually convertible, such might be the inference, but as light and heat have different modes of origin and transmission, it is quite possible that the heat of the spots though darker may exceed that of the photosphere. There are various signs of energy and activity in the history of sun-spots which seem to betoken the working of a fiery force. They have been observed to appear suddenly, as if by explosion: their forms as represented by Langley, Secchi and others, exhibit turns and sweeps suggestive of ideas of prodigious rending and motion; and movements have been actually seen, in parts flying asunder, and bright patches rushing at the rate of a hundred miles in a second![1] What notion seems more probable than that they indicate stupendous stirrings and stokings of the solar furnace? And then the vast domelike clouds of faculæ which often hover over and around the most active spots, how likely to be enormous bodies of magnesium or other metallic vapour in a state of vivid ignition!

But all these are but speculations and surmises, and carry no weight: nevertheless, they set me on observing, in my humble way, facts within my own reach. I am quite aware that observations have been already extensively made on the subject of the sunspots, and hitherto with little but negative results: but I would venture to suggest that the inquiry has

[1] Dr. Young's 'The Sun,' p. 117.

been undertaken on too vast and distant a scale, to the neglect of simple, close, frequent, and if possible, daily scrutiny. Remote as the sun is, we know that its rays reach the earth in about eight minutes of time, and that we can feel and measure their *direct power*, as well as estimate their indirect and circuitous influences; and this most readily in sunny climes, where the sun and the earth are more constantly face to face, with least of cloud, fog, or other terrestrial veil, to intervene. So it is that in this sunny land, even with simple means, we may get to know the source of light and heat, and to estimate its power, better than can those in cloudy countries with the most costly apparatus and the most profound calculations. Thus if, here at Cannes, in six days, on an average, in every week, I can observe and count the sunspots, in connection with careful registration of the temperature and weather, I may hope to learn more than more highly skilled scientists in less favoured lands.

Here at Cannes also, my friend Mr. J. F. Campbell of Islay, has been able, in many consecutive hours of uninterrupted sunshine, to measure the solar heat from day to day, and to prove that certain parts of the solar disk (the spots included) are hotter than other parts. 'RESULTS. After working a new art for some years, it was discovered, 1. that an area in a solar image, focussed on a sensitive screen, in the proportion of $\frac{2}{3}$, is much hotter than the rest, as proved by colours which record temperatures. 2. It was clearly proved that sunspots, while within the hot area, radiate much more heat than the rest of the area. Spots were seen to draw hot traces repeatedly. 3. The same spot, when outside of that hotter area, radiates less heat than the rest of the visible sun.'[1] Mr. Campbell further informs me that he actually measured the heat of the sun on the spotless day, December 5, which I have recorded, and that it did not rise higher than 1100° Fahr.; while on many previous days, with many spots, it reached 1600° and upwards. This was measured by his 'Pictorial Thermometer,' which marks degrees of heat by

[1] Thermography. By the Author of 'Frost and Fire. 1883. P. 343. Wakeham, Church Street, Kensington.

certain changes of colour in Prussian blue, Scheele's green, and other pigments.

In a letter received January 15, 1884, he writes, 'I have twice proved with my pictorial thermometer, that some of the spots seen on the hot area, were much hotter than the rest of the solar image.' . . . 'While big spots were passing, the temperature rose: while there were no spots, or minute spots only, the temperature fell.'

Thus we have already accumulated several direct observations in support of the proposition which I have advanced, that sunspots, in proportion to their size and number, increase the sun's heating power, and that their great diminution or disappearance reduces that power, and is a direct cause of terrestrial cold. My daily observations are continued; and I have already succeeded in correctly predicting the changes of temperature 6 or 7 days beforehand.[1] Still many further observations are needed, and on a larger scale, to establish these propositions on a satisfactory basis.

The extraordinary Morning and Evening Sun-glows.

As these remarkable appearances were first noticed before the time of the disappearance of the sunspots in the beginning of December, I was led to suspect that they had some connection, but I soon had to give up that idea, as they have daily continued to recur under varying circumstances of sunspots and temperature.

My first record is on November 30. 'Large red glow in the west, half an hour after sunset, *which had not been red*.' December 1. 'Same vivid glow in east half-hour before sunrise, crimson first, then passing into orange, and *disappearing* before sunrise, which was not redder than usual.' These two observations deserve attention, because they give the simplest view of this unusual glow, without the complications which appeared after, when clouds confused the scene. I thus reasoned—This glow must be caused by the sun's rays lighting up something very high in the atmosphere half an hour (or

[1] Thus on December 20 (after having given an intimation to the *Pall Mall Gazette* of the cold on the 18th and 19th) I telegraphed—'More spots appearing, expect warm weather,' which followed and continued to the year's end.

more) before or after sunrise or sunset. I guessed the height at 30 or 40 miles, but this is a matter which astronomers may compute. The colours, consisting of reds and yellows, the least refrangible rays, are such as may be expected to best find their way through a translucent but refracting medium : and what can this medium be at a height above the ordinary region of even clouds ? At first I was inclined to think it must be ice-dust, deposited from the air, through the unusual intensity of the cold caused by the absence of sunspots, and which would first and most affect the loftiest regions of the atmosphere bordering on space. High and dry as the air there must be, any remnant of water or ice vapour which it may hold in solution would be condensed into ice by the more intense cold ; and a nimbus or haze of the finest possible ice-dust would be formed, of brilliant optical properties, sparkling in crystal prisms and facets, refracting or reflecting each ray from the realms of light. Such a cloud of ice-dust would explain the abundant effulgence of light accompanying these glows, or as they may better be termed *glares*. The sun may have set with a very moderate radiance, and the grey shade of twilight seems to be commencing, when there rises a new light above the western horizon—soon rising in height and kindling to a glare, first golden, then orange, and passing through different tints of red and crimson, until gradually extinguished by the shades of night.

The above description I believe to represent the constant or essential features of the phenomenon ; but they become infinitely diversified and complicated by the presence of clouds in various forms, reflecting new lights and producing new colours, objective and subjective, and even involving the moon and stars in novel colours as if in a scene of phantasmagoric enchantment. The pages of ' Nature ' were loaded with long elaborate descriptions of numbers of these chromatic puzzles, with very little attempt to solve their mystery or trace them to their true physical causes. I was more successful in the following observation.

On December 2, a day of minimum sunspots, half an hour after sunset a bright glow of deep red light gradually arose above the west and south-west horizon to a height of

30°, blending above with purple clouds, whose edges reflected a rosy light. In the blue-grey sky a little above was the moon, three days old, appearing plainly of a *pea-green* colour. Guessing that this was only a subjective phenomenon, produced on the retina as the colour complementary to the adjoining red glare, I shut out this glare by looking at the moon through a telescope :—it then presented its own bright cream colour without a tinge of green ! Yet after this observation, which the editor of 'Nature' refused to insert in his journal, I saw a further controversy about the *green moon*.[1]

The long article by Mr. Norman Lockyer, which appeared in the 'Times' early in December, advocating Mr. Meldrum's hypothesis, that the strange atmospheric phenomena were caused by volcanic dust in the air, derived from the eruption of a volcano near Java—created a great sensation, and various powers of the press were employed to strengthen the impression. The article being written for the public, was graphic and striking in description of the prodigious catastrophe and effects of the eruption of Krakatoa, but attempted no scientific detail, nor to explain how what took place in August could continue to produce such world-wide consequences in December. It attributed to the supposed volcanic dust an imponderability and ubiquity incomprehensible. The submarine volcano might by the explosive power of steam (which has no limit) project the dust into the highest region of the atmosphere, but what could keep it there and spread it over the world in defiance of gravitation ? Answers were supplied by Mr. Preece and Mr. Crookes, whose suggestions in the 'Times' removed from my mind the chief objections to the Meldrum hypothesis. Mr. Preece writes :

'If we assume that the mass of volcanic matter projected with such force into the atmosphere in the Straits of Sunda was highly electrified, then it must have been electrified with the same sign as that of the earth—viz. negative. Therefore when the force of projection had exhausted itself, the cloud of matter would be subject to two other forces besides gravity—the repulsion of the electrified

[1] It is probably different with the *green sun*, and the *blue sun*, described by several observers, and which I have never seen : but they could be easily tried by the telescopic test.

earth, and the self repulsion of each particle of electrified dust. The first would determine the tenuity of the cloud; for the lighter the particles, the further would they be repelled, and the heavier the particles, the quicker they would descend. It is quite possible to conceive that they might be so minute, and so highly electrified, as to reach the highest confines of our atmosphere, where they would remain as long as they remained electrified. The second repulsive force would cause the particles to spread out continuously in a horizontal plane until they would cover an area determined only by their quantity.' 'Times,' December 14, 1883.

Mr. Crookes refers to his paper read to the Royal Society in 1879, in which he showed that at a rarefaction of a millionth of an atmosphere, two pieces of electrified gold leaf repelled one another at a considerable angle for 13 months without loss of charge. Such a rarefaction exists in the atmosphere at a height of 62 miles above the earth's surface, and renders the attenuated air a non-conductor of statical electricity, and therefore quite capable of retaining the self-repellent property of particles of dust, which are much smaller and lighter than the pieces of gold leaf; so these electrified particles, once projected 50 or 60 miles above the earth's surface, might remain there for many years.

It seems then quite possible that matter from an exploding volcano may reach the highest regions of the atmosphere, and in form of the subtlest dust remain and spread there by virtue of its electric state, in opposition to the forces of gravitation and aggregation. And some remarkable evidence has come forward that such matter has been found in the deposit collected from snow and rain. Mr. MacPherson at Madrid and others in various localities have described traces of mineral matters resembling those from volcanoes.

But I still find a difficulty in understanding how volcanic dust (of which powdered pumice stone may be supposed to be a rough type), a comparatively opaque matter, can produce the extraordinary exaggerations of light as well as of colour, which are displayed by these glows or glares. Half an hour or more after sunset, when twilight is beginning, the western sky is lighted up with a new illumination, which enables one to read for many minutes later, and the varying hues, although

they may be said always to have a dinginess in their aspect, are flaring colours, impressing strongly the organs of vision, and thus producing secondary or complementary hues on other light objects. I incline strongly to the notion, before expressed by others as well as by myself, that a cloud or nimbus of ice-dust is the chief cause of the phenomena, its formation being promoted by the presence of the volcanic dust. A similar view has been entertained by Mr. Aitken as to the more ready formation of fog and cloud in the presence of particles of soot or smoke, and not without reason.

But the formation of water-cloud in the highest regions of the atmosphere must have this characteristic, that the particles of water must be extremely *fine*, and in the state of perfectly dry *ice*. *Fine*—because the watery vapour at these heights is extremely scanty; and frozen—because the temperature there is far below the freezing point, and the more so during the night, when the sun's rays are withdrawn. I do not know—and I doubt that any one exactly knows—what is the state of water in a frozen cloud. Probably it is a crystalline dioptric solid of extreme minuteness, and possessing decided powers of refraction and reflection with respect to light. Much of this ice-dust must be continually forming and melting away in the regions above the line of perpetual snow, and doubtless is concerned in producing various atmospheric phenomena, particularly those of sunrise and sunset. The approach of winter cold will obviously increase the manifestation of these phenomena.

So likewise if volcanic or any dust be present in the higher regions, increasing the tendency to the deposition of ice-dust, it will manifest its action most at the time of the loss of heat at sunset and on approach of winter. This consideration may explain why these appearances in the skies did not command general attention till the approach of the cold season, especially in the sudden increase of cold at the disappearance of the sunspots early in December. And should there again recur a disappearance of sunspots with great lowering of temperature, there would in all probability be an increase in these atmospheric manifestations. I am not well versed in the indications of the spectroscope, and may be in error, but

I cannot understand how some experts with that instrument seem to deny the presence of water in any form in the high colour clouds because there is no rain-band in them. I fancied that the rain-band indicated moisture, which can have no existence in regions so high and dry. Throughout this month, January 1884, the barometer has been high, and there have been no signs of rain; but there is often an appearance of haze in the blue sky; and in mornings and evenings, apart from the glows, many forms of slight nimbus and cirrus may be discerned high in the atmosphere. The glows display themselves usually in a bank of nimbus from 10° to 30° high, often with two or three rays, as if from the sun many degrees below the horizon.

I commend all these natural phenomena to the attention of amateurs, and especially the study of sunspots, which seems likely to prove very useful as well as interesting.

It may have been inferred from the contents of this and of the preceding chapter, that since my retirement, I had undertaken little professional work; and that I made no attempt to republish new editions of former works which have long been out of print, although much of the matter contained in them was of such permanent interest that it could hardly be said to be out of date, and during the interval there had accumulated no small amount of new and original matter. But I found such comfort and refreshment from repose from everything like taskwork, that I thought that my mind, which had certainly been overstrained in past years, needed longer rest. I flattered myself too, that my past works would not be altogether forgotten; and that justice would be done to them at least by some of the many whom I had taught, and several of whom had now become teachers and authors. But in this expectation, I was for the most part doomed to disappointment. What was taught in the schools was every one's property, and required no recognition, which was reserved only for the most recent novelties, however frivolous their character.

Some years ago Dr. Quain mentioned to me the project of the Dictionary of Medicine which he had engaged to edit, and asked me to write some articles for it. But this was a kind

of work very different from that in which we were at one time agreed to write together; and I could not find in writing contributions to a ponderous compilation under not the most genial restrictions as to matter and manner, a sufficient inducement to emerge from my retirement.

In February 1883 I received from Dr. Quain a note to say that he was sending me by private hand a copy of his Dictionary of Medicine, and in a few days I received it, and after a brief inspection of the book gave expression to some of my feelings in the following letter.

'Cannes: February 7, 1883.

'My dear Quain,—I am obliged to you for making me a present of a copy of your Dictionary of Medicine, and I congratulate you on having brought to a completion what must have been a work of enormous labour. You are so good as to say, "It will be one of my greatest sources of satisfaction and pleasure in having brought it to an end, if it should meet with your approval."

'I doubt not that in the details of this great mass of work by so many able and experienced writers, I shall find much to approve of and to learn from: but I must confess to a predominant feeling of painful surprise, on glancing through several subjects with which my name has been identified during the last 50 years, at not finding it once mentioned. I refer especially to the articles on the heart, lungs and pleura, and physical examination, with the exceptions of my son's articles on asthma and phthisis. Yet you must know, as well as any one, how much I had done to clear up these subjects, even before 1840 when the last edition of my work on the chest was published; and how in subsequent years I continued to teach, lecture, and publish on the same subjects.

'No doubt there have been many other labourers in the same field, and it would be impossible to mention them all: but if any deserve record, it is those which have succeeded in generalising the subject, and making its facts intelligible. Now this I claim to have done (to mention one instance) with regard to the physical diagnosis of valvular disease of the heart, and to have placed it on a comprehensible basis.

'Another subject in which no reference is made to my observations, is on determination of blood and inflammation: yet both Virchow and Dr. Burdon Sanderson insist on their importance as bearing on the nature of inflammation.

'It is my belief that none of the writers of the articles in question

in your Dictionary, have ever read my works on the subjects; and I can hardly blame them, as these books have been so long out of print: but you must have read them, and might have directed attention to them, *as you have obviously done to your own papers on various topics.*

'I do not forget your friendly offices on many occasions, nor the kindly help that my son has received from you in return for what I was able to do for you at the early part of your career. But aged as I am, I see that I must rely on my own efforts, if God spares me, to leave behind me some record of my humble efforts to fulfil my mission.

'Meantime I remain, dear Quain,

'Your shelved old Friend,

'C. J. B. WILLIAMS.'

'Dr. Quain,
'Harley Street, London.'

And the result was the determination to write these Memoirs, which through God's mercy are now brought to a conclusion—with the full consciousness of many errors and imperfections of thoughts, words, and actions in the life narrated, and of no exemption from the human weakness of egotism—the great snare of the autobiographer—in the narrative.

If not in his Dictionary, in the following letter (for which I thank him), my friend Dr. Quain seems to express his desire to take me down from the shelf.

'67 Harley Street: September 4, 1883.

'MY DEAR DR. WILLIAMS,—In the letter which you wrote to me from Cannes several months ago when acknowledging the receipt of a copy of the Dictionary of Medicine which I had the pleasure of sending to you, you blamed me for allowing your work to be ignored by writers on several subjects to a knowledge of which you have contributed: and you said that by my having allowed this silence as regards the mention of your name, I have shelved an old friend. In this statement is comprised a charge of ingratitude and of a want of appreciation of your work.

'There is no friend whom I have ever had to whom I owe more than to yourself—and for this I have felt, do feel, and have always expressed my gratitude. Intimately familiar with your work and with your teaching, I have always spoken of you as the principal founder of our modern school of Pathology, and I have often been led to compare your position in this science with that of Müller in the science of Physiology. Your charges against me, then, so en-

tirely opposed to the feelings and sentiments of many years duration, caused me the deepest pain—a pain increased by every subsequent mental reference to the subject—Hence the delay in replying to your letter. However, the ordeal has sooner or later to be met, and I shall try to put, in as few words as possible, all that I have to say in reference to the immediate subject of the Dictionary. The work is the absolute property of Messrs. Longmans, and I was bound to carry out as far as possible the plan on which the proposal for the publication of the Dictionary was based. It was to be a work which should present the Practitioner with a condensed view of the present state of Medical Science without reference to the agencies by which this had been arrived at. In the directions issued for the guidance of the several writers, the following paragraph occurs. "The articles are not meant as a rule to include much historical matter, frequent reference to authorities, or the discussion of unsettled opinions." Having obtained the services of the best available writers in each subject, my duty coinciding with my inclination—was to interfere as little as possible with the several authors—leaving to each the responsibility of his own work. Sometimes it was necessary to ask writers to condense their work or to sanction its being done, sometimes to alter it, but I confess that it did not occur to me to point out to any one that reference should be specially made to the name of any particular individual, feeling satisfied that each writer would do all that was needed for the completeness of his work. If I had thought that you were anxious about reference being made to your name, most certainly your wish should have been fully gratified, equally so had I felt it to be necessary—but to me your work has always seemed to me so important and so complete—constituting a large part of the modern history of Pathology and Physical Diagnosis, that I should as little have expected a reproach from you for not mentioning your name in connection with these subjects as from the shade of Harvey for not mentioning his name in connection with disorders of the circulation, or of Laennec because no reference is made to his name in connection with the stethoscope and auscultation.

'I can only repeat now my assurance that had I known your feelings on the subject, your name should have been mentioned so far as lay in my power, whenever and wherever it could be done. At the same time, dear Dr. Williams, let me remind you that I earnestly begged of you to write for me the articles Pathology and Physical Diagnosis. In these articles, had you assented to my request, you would have had the most favourable opportunities of bringing forward the essential features of your previous work.

'In conclusion let me add that whatever you may feel or say on this subject, I shall hope to remain in the future, as in the past,

'Your grateful faithful friend,

'RICHARD QUAIN.'

Whilst the readers of the Dictionary reap the benefit of the imperative utilitarianism of the '*present* writers,' I trust that my readers will not find it unpleasant to recur to the records of the *past*, nor unprofitable to draw from them instruction for the *present*, and even for the *future*. History repeats itself; and a retrospect of past progress will often assist in further advancement, more than a dogmatic inculcation of present knowledge, as if it were stationary and complete. The most enduring as well as the most comprehensive knowledge is that of principles; and the development of principles is for the most part historical work. But this argument, to be continued profitably, should be pursued from abstract into detail, which the end of the book forbids.

If I have hitherto got little credit for the work of my life, it matters little now: but seeing that it was falling into oblivion, I thought my duty was to make this effort to preserve it for whatever it may be worth, for the benefit of humanity.

This chapter concludes secular matters—past—present—and future: but I have a few thoughts on subjects of more enduring interest, which I reserve for the last chapter.

CHAPTER XLVI.

REMINISCENCES AND MEDITATIONS ON THE HIGHER LIFE. 1884.

Religious exercises and opportunities increased by retirement. Study of Greek Testament. Evangelical convictions on Christian Truths. Aids of learned commentators. Discussion of certain passages of Scripture. Literal translation recommended. Other Scripture helps and manuals. In all *one thing* necessary. God revealed to man in and through CHRIST only—Scriptural proofs — John — Hebrews, &c.— Gospel of John throughout, especially 14th chap.—Convergence of all Scripture to one point—CHRIST. Old Testament—Gospels—Epistles and Revelation. To the Christian, CHRIST ALL and IN ALL —The True God and Life Eternal—'Guard yourselves from *imitations*.' Church of England Christian in Articles and Liturgy, always holding CHRIST the Mediator and Redeemer. Christian faith avoids equally human superstition and infidelity—Tares—Work of the Enemy. *Protestant* is Christian *witnessing for* Truth as it is in Jesus—God's Truth —as Jesus Christ before Pontius Pilate. Protesting for the Truth includes protesting against error—but this a negative and secondary sense—Primary importance of founding Protestantism on the positive Truth of God, not on mere negation of error. Imperfect knowledge of Scripture Truth among educated classes. Equal ignorance of the necessity of *growth* in Divine Grace and knowledge. Explanation of Greek words denoting 'Become holy,' and 'Full knowledge.'

I PROPOSE to devote this last chapter to a few reminiscences and reflections relating to the Higher Life and the work of Grace. During a busy professional life I had little time or opportunity for religious associations or exercises; and except in attending a few meetings of the Christian Medical Association, which has been already noticed, there is nothing to record. It was always a refreshment to me to visit my daughter's dear friends, the Rev. W. W. Andrew and his family at Hethersett, whose devotion to the Higher Life and labour of love was always exemplary and edifying; and our Bible readings together were a source of enjoyment and comfort. Since my residence at Cannes there have been also profitable opportunities for Bible readings, especially at Mr.

and Mrs. Cheyne Brady's meetings; which I attended until increasing deafness incapacitated me.

One of the principal objects to which I looked forward in my retirement was a course of Scripture study, more consecutive and complete than I had been able to pursue in the midst of professional occupations. Mention has been already made of our customary readings of the Greek Testament, but little was attempted beyond getting as literal and simple a translation of the text as possible, without going into the expositions of learned commentators. We attended the ministry of that sound and judicious preacher, the Rev. W. Reeve, of Portman Chapel, for upwards of twenty years, and found much comfort and edification in his thoroughly evangelical teaching and ministrations. And the more I studied them and observed their effect on the lives and conversation of men, the more I became attached to the leading doctrines of our reformed Church as expressed in her 11th and 6th articles, comprehending *justification by faith* and *the adequacy of Holy Scriptures*, through the promised teaching of God's Holy Spirit, to make us wise unto salvation through faith which is in Jesus. This preference of spirituality and truthful simplicity of doctrine implied also aversion to all forms of ritualism and sacerdotalism; not only as signifying a tendency to relapse into the errors and superstitions of the dark ages—tares sown by the enemy,—but also as vitiating and destroying the unity and sovereignty of the most fundamental truths of Christianity.

In the study of the Holy Scriptures, especially their most fully inspired and revealed portion, the New Testament, I found the writings of modern commentators of the greatest use. Dean Alford's translation and exegetical notes proved very instructive; and one cannot but admire the candour as well as earnestness that pervades them; but the language of the latter is often so much involved parenthetically that it is difficult to catch its meaning; and not a few errors of the authorised version escaped his notice. Bishop Lightfoot's scholarly revisions of the Epistles to the Galatians and Philippians[1] gave me much satisfactory help, as did also Dean

[1] In Phil. 4. 7, Dr. Lightfoot proposes to translate ἡ ὑπερέχουσα πάντα νοῦν, *surpassing every device* or *counsel* of man. I have for years entertained

Vaughan's profitable and devotional commentary on the Epistle to the Romans.[1] Adolph Saphir on the Epistle to the Hebrews, Hay Aitkin's 'School of Grace,' (Tit. ii. 11–13), and some others of his works I found very edifying; Westcott's Canon of Scripture proved satisfactory in settling the mind in questions as to the authenticity of different parts of Scripture.

For an accurate knowledge of the language of the New Testament I recommend the daily reading of portions in the original Greek to those who have even a moderate knowledge of that language. For others, the revised version may be substituted, as decidedly more exact than the authorized translation, which in many instances fails to render accurately the sense of the original. I am indebted to my friend Mr. Arthur St. John Mildmay for a copy of a very elaborate work, entitled, 'The Englishman's Bible,' by Thomas Newberry, of Weston-super-Mare. In this the endeavour is made 'to put the reader in possession of some of the precisions, beauties,

the presumptuous thought that I can suggest another rendering, more literal, and more full of comfort in its meaning than this or the ordinary translation. I cannot see how ὑπερέχω can be made to mean, *I surpass*. Ἔχω, I *have* or *hold*, never means *passing*, or *motion*, but *station*. So ὑπερέχω means I *overhold*, *dominate*, *have position over*. Τὸ ὑπερέχον, the participle, means anything *holding position above*, *higher*, Rom. 13. 1; Phil. 2. 3; 1 Pet. 2. 13. To pass or surpass would be expressed by ὑπερβάλλω, as in Eph. 3. 19, and 2 Cor. 9. 14. Πάντα νοῦν may be translated *every mind*, more literally than *all understanding*. Then we have the following literal translation of the 6th and 7th verses. 'Be distracted about nothing: but in everything by prayer and supplication, with thanksgiving, let your requests be made known unto God. And the peace of God, overholding (or dominating) every mind, shall guard your hearts and your thoughts in Christ Jesus.' The usual translation of the article and participle into relative pronoun and verb—*which overholdeth every mind*—may be substituted, but is less literal. The thought of God's peace specially superintending every mind, is surely more comforting than that of its being something incomprehensible.

[1] Dr. Vaughan's commentary is the only one in which I have seen mention made of the omission of the Greek articles in certain passages, apparently with the intention of emphasizing the expression of personality. It seems to me to be more significant than even he makes it. When in Rom. 1. 17, the Gospel is declared to be (not *the* power of God, but) *God's power unto salvation to everyone believing*—there is a force and directness of assurance which would be impaired by articles and prepositions. In like manner in Rom. 8. 16, and 1 Jno. 3. 1, 2, the omission of the article *the* before *children*, enforces the strength of the union as *God's children*. There are many similar passages in the Epistle to the Romans.

and hidden treasures in the Hebrew and Greek originals, and to keep them before the eye of the Biblical student.' Variations in type, and a great number of marks and notes are used to distinguish and explain the full and precise meaning of particular words and texts, beyond what appears in the common translation. The work is one of prodigious labour and profound erudition, and is highly commended by several eminent scholars and divines. It seems a most valuable help to earnest students of Scripture who are unacquainted with the original languages. The smallness of the type and signs has prevented me from profiting by it so much as I could wish.

In addition to the Bible and New Testament, little books with a selection of texts for daily study are most useful and convenient. Of the great numbers of such, I may specially name as excellent, 'Daily Light on the Daily Path,' (Bagster), 'Night and Morning Watches,' 'Faithful Promiser,' 'Words of Jesus,' and others by Dr. Macduff, which I have often found acceptable among patients. The 'Altar Incense' of the same author long proved useful as an aid to family or private devotions. These in the last year have been richly supplemented by the manual of my dear old friend the Rev. W. Niven, formerly vicar of St. Saviour's, Upper Chelsea, whose state of health has debarred him of late from public ministration. But he has been blessed with fruitful work in old age, not only in a sweet pamphlet of exhortation on that special subject ('Fruit in Old Age'), addressed to aged pilgrims, but also in excellent commentaries on several of St. Paul's epistles for family reading. They seem to me models of Christian teaching—simple and plain, yet full of the very essence and efficacy of Gospel truth and comfort.

Two years ago I met with 'The Daily Round,' on each page of which is, 1. A text for every day in the ecclesiastical year; 2. A short statement of what the words mean and teach; 3. Some thoughts and reflections intended to bring home the general lesson, so as to make it of personal practical use; 4. A short prayer, in which what has been brought before mind and heart is laid before God; 5. An appropriate verse of a hymn. This little book, although wearing some-

what of a high church dress in phrase and form, especially in the editions adorned with red letters, I found on closer study to be, for the most part, an excellent manual of devotion, rich in the most precious scriptural truths, and deeply spiritual and practical in their interpretation and application. The language although simple, is remarkably terse and epigrammatic, and speaks so plainly and to the point, that every sentence in each page is full of meaning. And most of the pages ring with the true sound of the Gospel in the Name which is above every name.[1] Yet, strange to say, in some pages, neither the name nor the office of Christ is mentioned, and the language might be that of a deist. I doubt not that the omission is unintentional; and perhaps it may be pleaded, that the name, if not expressed, is understood. But THAT NAME is the NAME to be not only understood, but ever expressed and confessed[2] before all, as the only 'NAME given among men wherein we must be saved.'[3]

And here is the point on which (as it seems to me) centres the whole truth of Christianity,—GOD revealed to man, in and through CHRIST, *only*. This conclusion, in my humble opinion, is fully warranted by the teaching of the following and other portions of Holy Scripture.

John, chap. 1. vv. 1–4 and 9-14; Mat. 1. 23; Isaiah 9. 6, 7; Heb. 1. 1–3 (Literal translation),—'God, having of old in many parts, and in many modes spoken unto the fathers in the prophets, at the last of these days spake in (*his*) Son (ἐν υἱῷ), whom He appointed heir of all things, by whom also He made the worlds; who being effulgence of His glory, and very impress of His substance,[4] and upholding all things by the word of His power, having made purification of sins, sat on right hand of the majesty on high, that is, in full possession of the power and authority of God. 'All power is given unto me in heaven and on earth,' Mat. 28. 18.

[1] Phil. 2. 9, 10, 11. Revised Version.

[2] Matt. 10. 32. [3] Acts 4. 12.

[4] χαρακτὴρ τῆς ὑποστάσεως αὐτοῦ seems more than *image* or *likeness* of His *person* or *substance*. The sense of *cutting* or *engraving* is conveyed in the first noun, and in conjunction with the second (which surely is *substance*), conveys a meaning of *participation* or *identity*, rather than of mere likeness or imitation, such as the word image would express.

And to the end of the chapter is declared in prophecy the pre-eminence of God the Son, as King, Creator, and Everlasting God. Further on He is announced as 'High Priest for ever after the order of Melchizedek,' and a compassionate High Priest, having partaken of our nature; yet Jesus Christ, the same, yesterday, to-day, and for ever.' 13. 8. 'Through Jesus Christ, to whom glory for ever and ever.' 13. 21. To these absolute declarations of the Deity of Our Lord and Saviour Jesus Christ may be added that of Col. 2. 9. 'In Him dwelleth all the fulness of the Godhead bodily,' and many others, in letter and in spirit, both in the Old and in the New Testament.

And concerning this second Person in the Blessed Trinity, 'Very God of very God,' what does the Holy Spirit speak of Him and of His office? In the mouth of John Baptist:—'No one hath seen God at any time: the only begotten Son, being in the bosom of the Father, that One (Ἐκεῖνος) hath declared Him.' And of His sacrificial character, 'Behold the Lamb of God which taketh away the sin of the world!' John the Evangelist, the beloved disciple, names Him as Ὁ Λόγος, The Word, the Speech, the Voice of God; and as the personification also of all the Divine attributes:—Life, Light, Truth, Wisdom, Love, Holiness: through Him alone can man become partaker of these attributes of Divine Nature.[1] And if we follow the same evangelist, whom His Divine Master loved and instructed most deeply in His truths and in the mysteries of His love, we find Him in the third chapter opening the mind of the Jew to the necessity of a new birth for the spiritual reception of the new life from above. In the fourth chapter, after reproving the sinning woman of Samaria, He proclaims the spirituality and freedom of God's true worship through Him, the fountain of 'living waters springing up into eternal life.'

And without dwelling on the rich revelations of Himself in the intermediate chapters, as the Spiritual Bread of Life from heaven—the Light of the world—the Door of the sheep—the Sanctified of the Father—the Resurrection and the Life—the Glorified of the Father, we come to the 14th and two following chapters in which the identity and co-equality of

[1] John, throughout first epistle. 2 Pet. 1. 4.

God the Father with God the Son are emphatically affirmed; and not less absolutely and exclusively the Son of God—as Son of man—is declared to be the Mediator, Intercessor, and Advocate between God and man. But the revelations were gradual and progressive, and not completed until after the Resurrection and the sending the Holy Spirit, the Spirit of Truth who should guide into all truth (v. 17). 'I have yet many things to say unto you, but ye cannot bear them now. Howbeit, when he, the Spirit of Truth is come, he shall guide you into all truth' . . . 'He shall glorify me; for he shall take of mine, and declare unto you. All things whatsoever the Father hath, are mine' (26. 13, 14). But some revelations are announced at once, absolutely, and for ever, as fundamental doctrines, especially these two: I AM THE WAY, AND THE TRUTH, AND THE LIFE: NO ONE COMETH UNTO THE FATHER, BUT BY ME (14. 6); and—BELIEVE ME THAT I AM IN THE FATHER AND THE FATHER IN ME' (14. 11.) In these two declarations, fortified and enforced by numerous others, it is affirmed that Jesus Christ is the only Mediator between God and man, and as His Beloved Son in whom He is well pleased, He shares with God the Father all the glorious attributes of Divine Being, in which, in chap. 17, he intercedes with God the Father for the participation of His Church.

This being so, we can understand the convergence of all Scripture to this one point—CHRIST—revealed in the Old Testament dimly, yet intelligibly—in the Gospels clearly and personally—in the Acts, Epistles, and Revelation with emphatic distinctness and fulness. He is the 'One thing needful,' declared by Himself to be 'The good part,' 'The treasure found in a field,' 'The pearl of great price,' the end and object of the parables of the 'kingdom of heaven,' the theme of all the Epistles. Christ is 'God's power unto salvation' of Romans 1. 16; 'The end of the law for righteousness to everyone that believeth' (10. 3); 'God's power and God's wisdom,' of 1 Cor. 1. 24; Paul's 'glory' in Gal. 6. 14; the object of his prayer in Eph. 4. 14–21; the object of his struggle in Phil. 3. 13, 14;[1] of his thanksgiving and un-

[1] The force and meaning of this beautiful verse beginning in the Greek, Εν δὲ, has been injured in the authorized version by the interpolation of the

bounded adoration in Col. 1. 13–19. In fellowship with God the Father in possession and distribution of Eternal Life and all Divine attributes in John's First Epistle, and in announcements in anticipation of His Second Coming in Almighty Power and Great Glory in the Apocalypse.

To the true Christian then Christ is 'all and in all.' And this not in doctrine or idea only; but in reality. In the parable of the Vine He tells His disciples, 'Apart from me ye can do nothing.' It is only by the indwelling of His spirit that we can partake of His life and love, and in His strength bring forth fruit to His Glory. And should not the Christian, Christ's man, be very zealous in his Master's service, and jealous of His honour? Not only will he remember the warning in Matt. 6: 'Not everyone that saith unto me Lord, Lord, &c.,' but also the closing words of St. John's first Epistle, which, after emphatically declaring Jesus Christ the Son of God to be the True God and Life Eternal, concludes, addressing his children with a term of endearment, 'Τεκνία, φυλάξατε ἑαυτοὺς ἀπὸ τῶν εἰδώλων.' 'Little children, guard yourselves from the *likenesses*, or *imitations*.' There are many idols, or resemblances, and all the more dangerous, because they have an outward likeness or resemblance: and our only safeguard is that 'the Son of God is come, and hath given us understanding that we may know Him that is true, and we are in Him that is true—in His Son Jesus Christ' (1 Jno. 5. 20).

The Established Church of England proves its Christian character, not only in the Scriptural doctrines set forth in its Articles, but also by the evangelical character of its Liturgy, and by the express mention of the mediation and intercession of

words '*I do*,' which are not in the original, and the error has not been corrected in the Revised Version. Διώκω is a verb active, and immediately governs ἕν: thus the literal translation is—'but forgetting things behind, and reaching forwards to things before, I pursue one thing toward the goal unto the prize of the upward calling of God in Christ Jesus.'

Another example of the confusing effect of interpolating words, not in the original, may be found in Eph. 2. 1. And you *hath he quickened* (*did he quicken*, Revised Version), destroys the literal sense which couples 'And you' (heathen) of the first verse with 'us' (Jews) 'together with Christ,' of the fifth verse. Both heathen and Jews dead in trespasses—both 'made alive together with Christ, and made to sit together in the heavenlies in Him.' It has been to me a confirmation of the truth of Holy Scripture, that it comes out purer and clearer when rid of human additions.

Our Lord and Saviour Jesus Christ in every one of the prayers and thanksgivings. It is to be feared, however, that the monotony of the phraseology, and the usually irreverent mode of reading the service have much obscured the depth and vital importance of the meaning. Although I prefer a liturgical service to extemporaneous prayer, in common with many others, I should be glad to see some changes introduced with the view to render it more spiritual and evangelical; but this is too wide a subject to be entered on here. But I cannot help expressing the wish that the attention of the English clergy were more directed to improve the matter and manner in their ministrations as servants[1] of Christ, and not wasted in the trivial matters of ritual and ornament, emblems of an obsolete priesthood, belonging to an age of shadows and carnal ordinances, long superseded by the possession of a spiritual reality, Col. 3. 17.

The Confession of faith which I have endeavoured, however weakly and imperfectly, to express above, is designed to avoid equally the blinding and debasing errors of human superstition on the one hand, and the vain and dreary doctrines of unchristian infidelity on the other. These are all opposed to the Truth of Christ's Gospel; and in so far as they have penetrated the visible church they must be looked on as tares sown by the enemy, of which we are exhorted to beware, and to avoid—until the end when the Lord Jesus shall come to destroy them all in judgment. (Matt. 13. 30; 2 Thes. 2. 8).

I accept and rejoice in the title of *Protestant*; but less in its common negative sense of *protesting against error*, than in its positive and Scriptural meaning, (the first knowledge of

[1] It is remarkable how Paul in several epistles, and James, Peter and Jude, all glory in calling themselves slaves (δοῦλοι) of Christ. There are five or six other words for *servant* in Greek, but they choose one implying, 'whose I am,' as well as, 'whom I serve.' They 'are not their own, but are bought with a price,' and rejoice in His service which is perfect freedom, because they find His yoke *pleasant* (χρηστὸς) and His burden light, Matth. 11. 30, and desire every thought to be brought into captivity to the obedience of Christ. 2 Cor 10, 5. This explanation is rendered only partially in the Revised Version by the insertion, in the margin, of the term *bond-servant*.

which I owe to a tract by my friend the Rev. Hugh McSorley), *protesting or witnessing* FOR THE TRUTH. The Greek verb *μαρτύρεω* or *μαρτυροῦμαι*, and the Latin *protestor*, distinctly mean *I witness for*; and it is only Luther's prominent use of the word in a negative sense that has given it the conventional meaning of bearing witness against something. Take St. Paul's use of the word in 1 Tim. 6. 13. 'I charge thee in the sight of God, who maketh alive all things, and of Christ Jesus who before Pontius Pilate witnessed (*protested*, *μαρτυρήσαντος*) a good confession,' &c. Then see what was this 'good confession' as described in John 18. 37. 'Pilate therefore said unto him, Art thou a king then? Jesus answered, Thou sayest that I am King. To this end have I been born, and to this end am I come into the world that I should bear witness for (*μαρτυρήσω*, *protest for*) the truth. Everyone that is of the truth heareth my voice.' Thus Jesus Christ protests for or bears witness to the truth, and Protestants who hear His voice bear witness to the same. They are witnesses for the truth of God—'the truth as it is in Jesus' (Eph. 4. 21), 'the Faithful and True Witness' (Rev. 3. 14).

Protesting for the truth of course includes protesting against error, but this is a secondary function of the witness, whose first ground or stand-point is the Truth of God, the Rock of Ages—Jesus Christ, the same yesterday, to-day, and for ever—as He is revealed in the Holy Scriptures, carefully and prayerfully studied, with the promised help of God's Holy Spirit. It is only by the clear and full understanding and receiving of the truths of Holy Scripture that error can be detected and effectually counteracted, and there can be no doubt that a chief cause of the spread of error, superstition and infidelity in the present age, especially among the upper classes—is their general ignorance of the truths of the Gospel.

Many have I met with among what may be considered highly educated people, who knew less of these vital truths than the poor children of a Sunday school. And among those who have been better taught, and have learnt the rudiments of Christianity, how many are there who halt in these,

and heed not the exhortation of Peter to 'grow in the grace and knowledge of our Lord and Saviour Jesus Christ'? (2 Pet. 2. 18.)

'The path of the just,' we are told, 'is as the shining light, which shineth more and more unto the perfect day.' The work of justification is immediate and perfect, as is the righteousness of Christ which we appropriate by faith; we are complete in Him (Col. 2. 10). But sanctification and knowledge are essentially gradual and progressive; this is affirmed in many parts of Scripture, and I would mention two instances in which the meaning of the words has not been exactly expressed in our translations. In 1 Pet. 1. 15, there are two Greek readings, Ἅγιοι γένεσθε, and ἅγιοι ἔσεσθε, which the authorised version renders, 'Be ye holy.' But if the first word be taken, the most literal translation is 'become ye holy;' or if the latter word ἔσεσθε be preferred, it may be rendered 'ye shall be holy,' and this is adopted in the revised version: both the last expressions indicating a state not at once starting into Godly perfection, but *becoming holy* as a gradual and progressive following of Divine holiness. Γίνομαι in this sense may be generally rendered I *become* or I *come to be*, and so distinguished from Εἰμὶ, which in conjunction with Ἐγὼ, expresses self-existence and perfection, the prerogative of Deity.

A similar idea of progression is conveyed with regard to knowledge, γνώσις, by the prefix, ἐπὶ, so that ἐπίγνωσις denotes fuller or more perfect knowledge. This distinction is never noticed in the authorised version, and but rarely in the revision. Yet it is full of significance, especially in the epistles, where the words ἐπίγνωσις and ἐπιγινώσκω are used to express increase or greater fulness of knowledge and progress in the divine life. In his prayers and aspirations for his converts the writer desires for them this fuller knowledge. See Col. 1. 6–9, 10, Col. 2. 10, Ro. 1. 28, 10, 2, Eph. 1. 17, 4. 13, Phil. 1. 9, 1 Tim. 2. 4, 2 Tim. 2. 25. 3. 7, Tit. 1. 1, Phile. 6, 2 Pet. 1. 2, 3, 8. 2. 20, 1 Cor. 13. 12. In these passages searchers may find encouragements to 'follow on to know the Lord,'—'that their hearts may be comforted, they being knit together in love, and unto all riches of the full assurance of understanding, that they may know the mystery

of God, even Christ in whom are stored all the treasures of wisdom and knowledge.' (Col. 2. 2, 3.)

I feel that I ought to offer some apology for presuming to write thus freely on subjects, that may perhaps be beyond my capacity and scholarship; and it is this, that whilst humbly conscious of liability to error, and willing to submit to more competent authorities, I am actuated by a sincere desire to offer my feeble testimony to what appears to me to be GOD'S TRUTH.

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